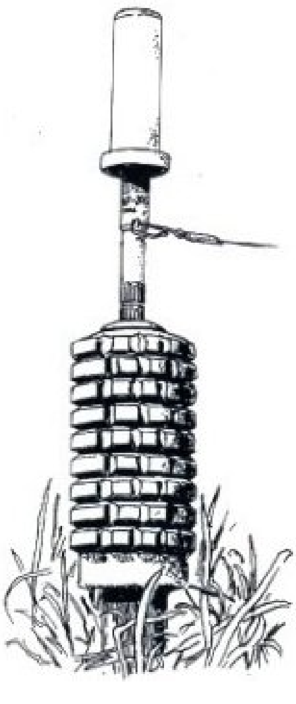
Mines & Fuzes

Czechoslovakia
Hungary
Yugoslavia
USSR & GDR

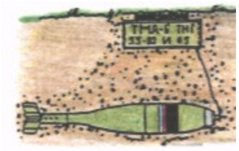


All data collected and compiled by: Peromni

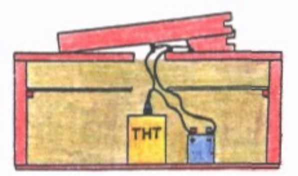
BOOBY TRAPS

Mines may be booby trapped In a variety of ways. Some mines have wells for anti-handling fuzes, these usually contain a booster with a threaded cavity for a standard fuze, (see TMN-46), others rely on pressure release, (see MS-3 mine). Improvised booby traps are more hazardous as there a no indication of their presence given by identification of the mine. Examples of improvised booby-traps are shown below, these examples are an indication only and do not purport to be a definitive list.

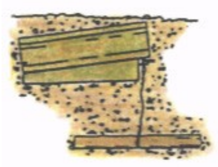
CAUTION: Any mine may be booby trapped, search for indications such as enlarged notes, odd wires of protrusions, follow basic procedures.



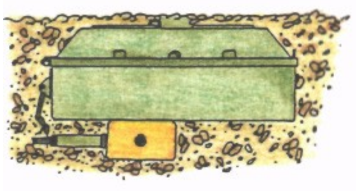
Mortar bomb buried under mine.
Pull fuze fixed into mortar bomb with packing



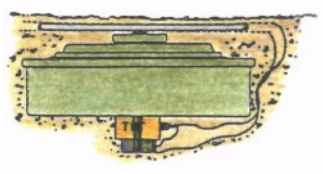
Electric detonator in wooden anti-tank mine. When the lid is opened the nail is pulled on to the loop completing the electrical circuit



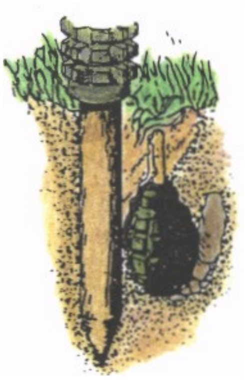
Wooden AP mine with the looped pin wired to an anchor stake, when the mine is lifted the pin is withdrawn.



A demolition block with pull fuze. The pull pin is wired to the carrying handle

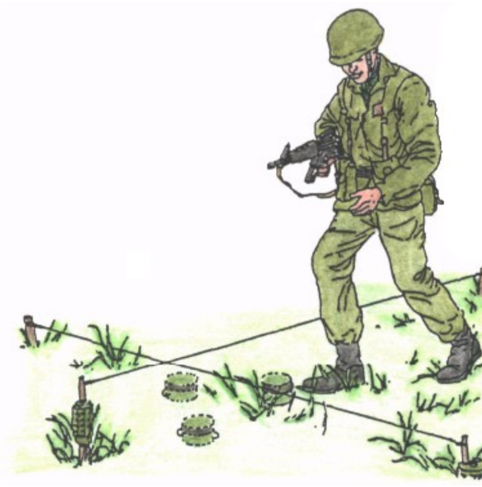


Two sheets of metal gauze are separated by a ring, such as a loop of fan belt. Pressure on the gauze forces them into contact completing the electrical circuit

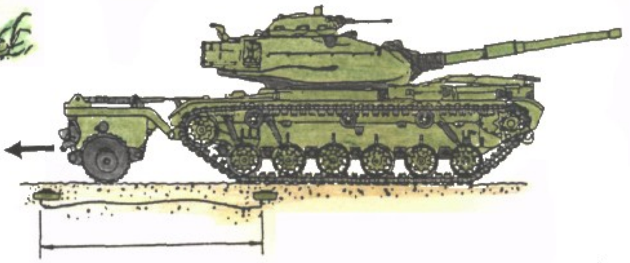


Handgranade used with stake mine. The granade is wedged in place and the safety pin is withdrawn. Pulling the mine stake releases the arming handle.

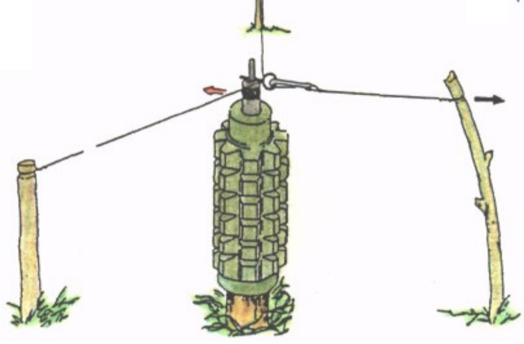
BOOBY TRAPS



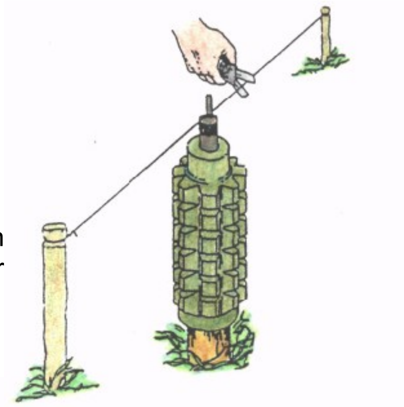
Pressure, (tread), mines buried around the point where the trip wires cross, at this point attention is concentrated upon the trip wires



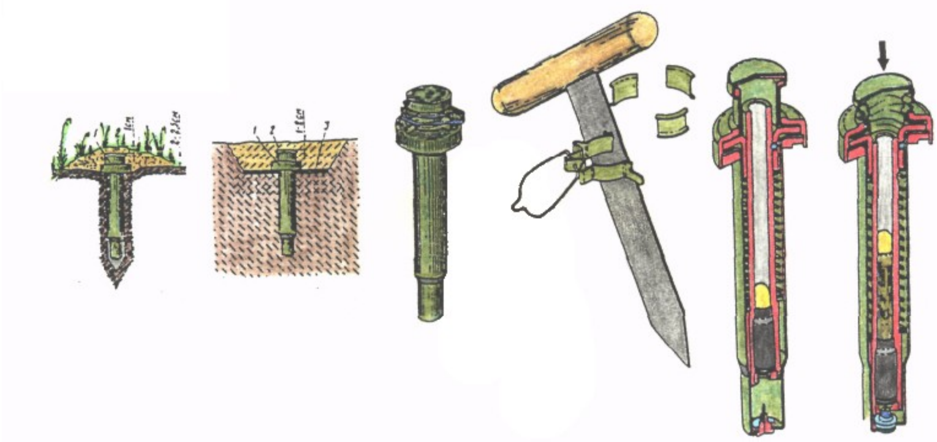
AT mines rigged to defeat mine rollers or flails



Tensioned trip wire. The pin is held in place by the wire passing through the ring

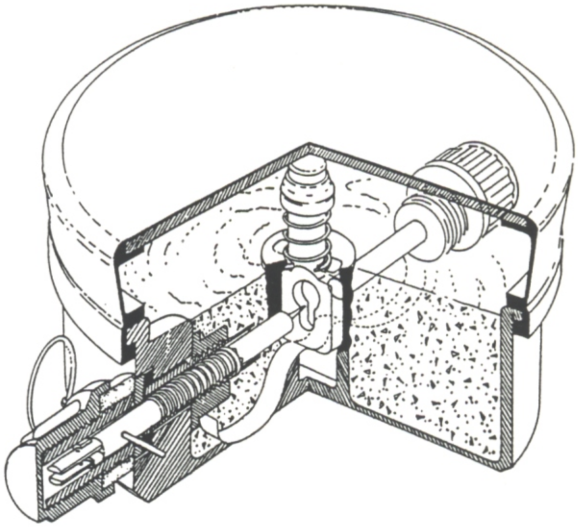


Tensioned trip wire. The wire passes through the safety pin hole in the striker

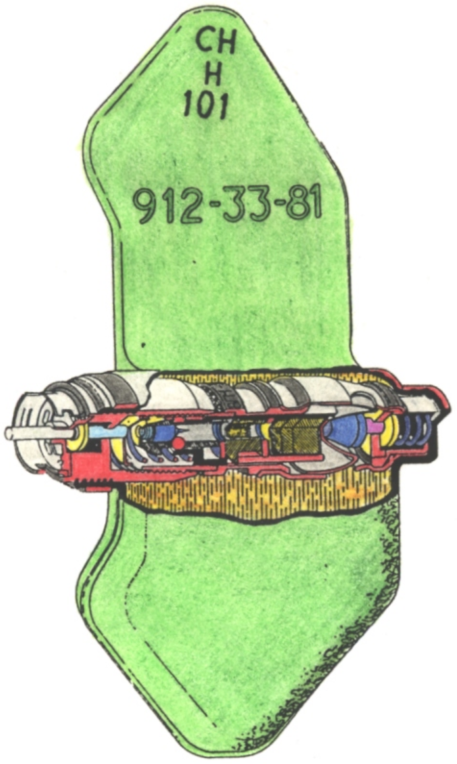


PMP (Anti-Personnel pistol mine) is a WW2 design firing a 7.62mm Tokarev cartridge when the top is crushed

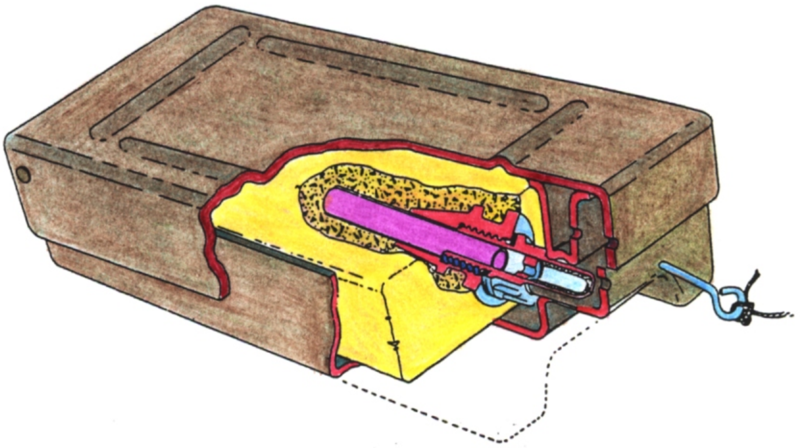
A/P BLAST MINES



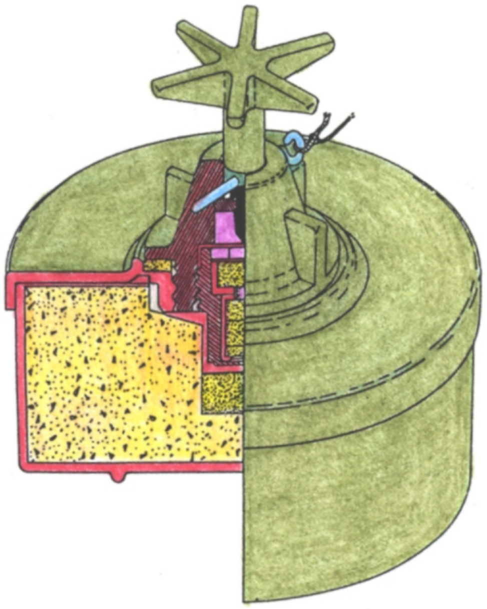
GAYATA



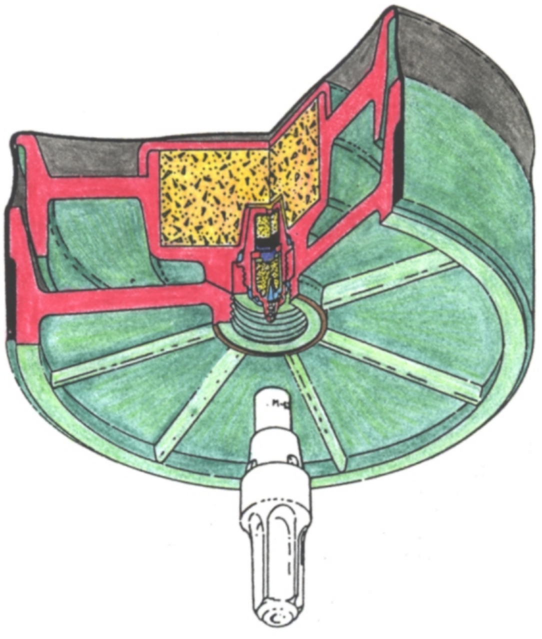
PFM



PMA-1

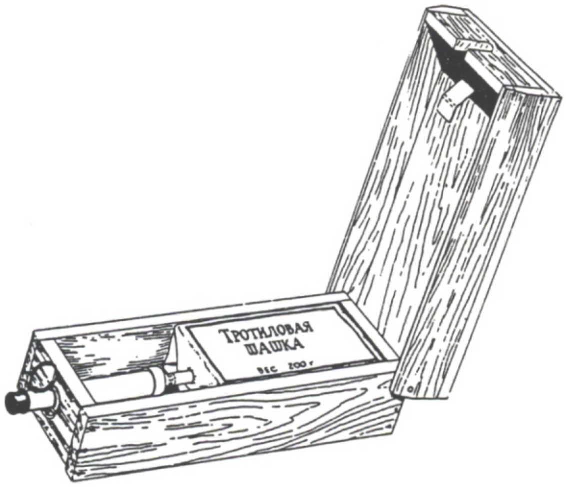


PMA-2

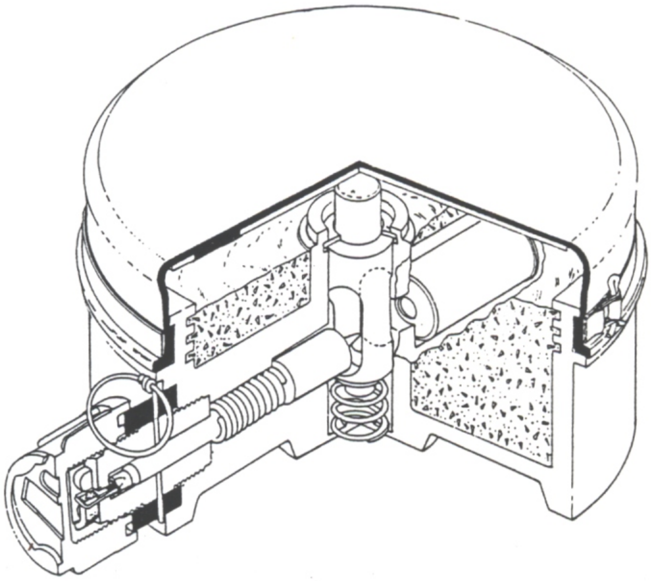


PMA-3

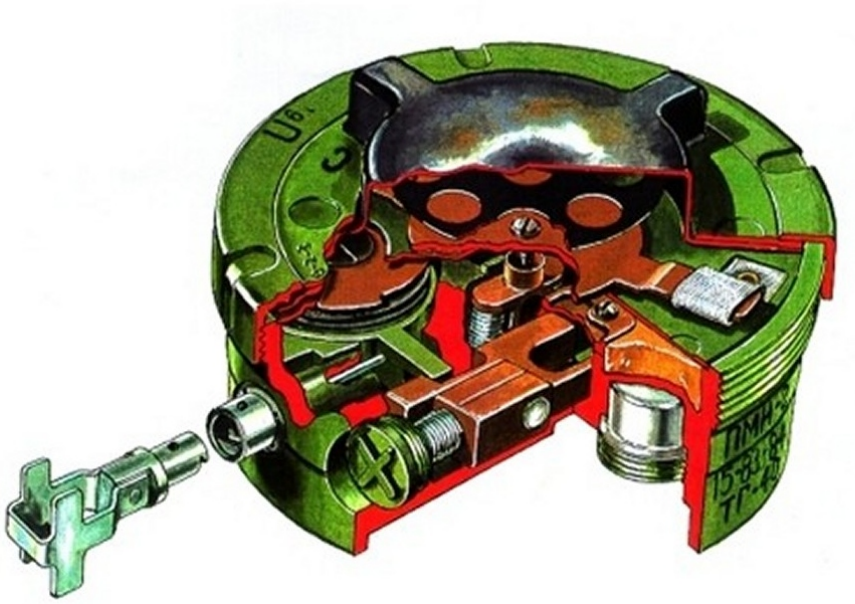
A/P BLAST MINES



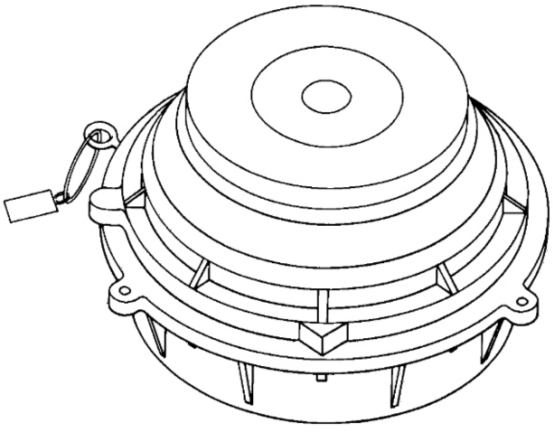
PMD-6



PMN

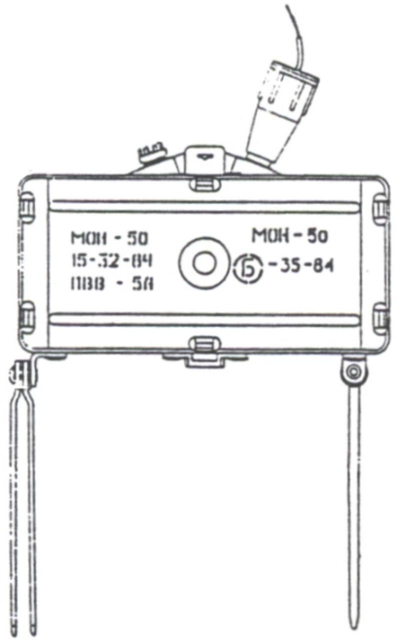


PMN-2

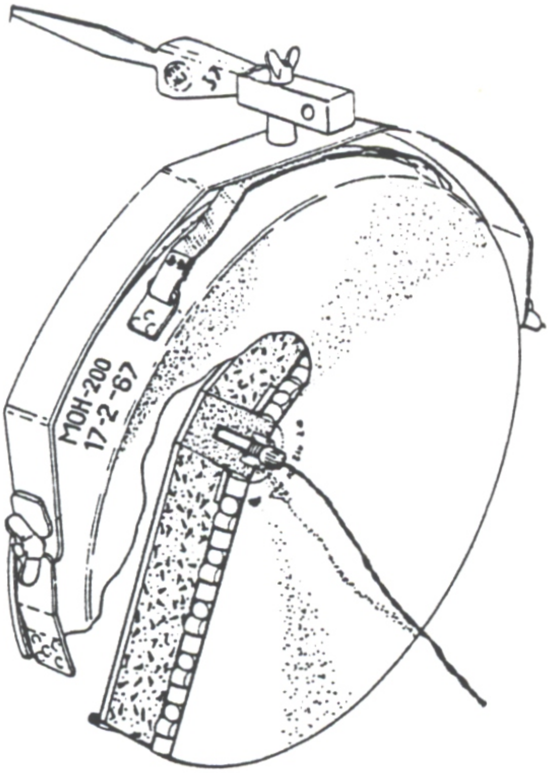


PPM

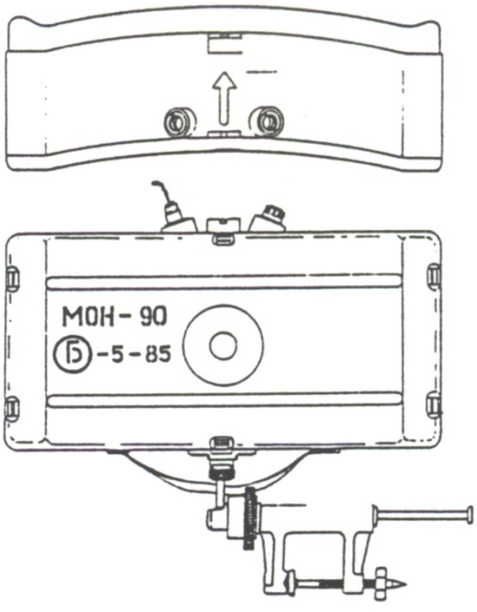
A/P DIRECTIONAL FRAGMENTATION MINES



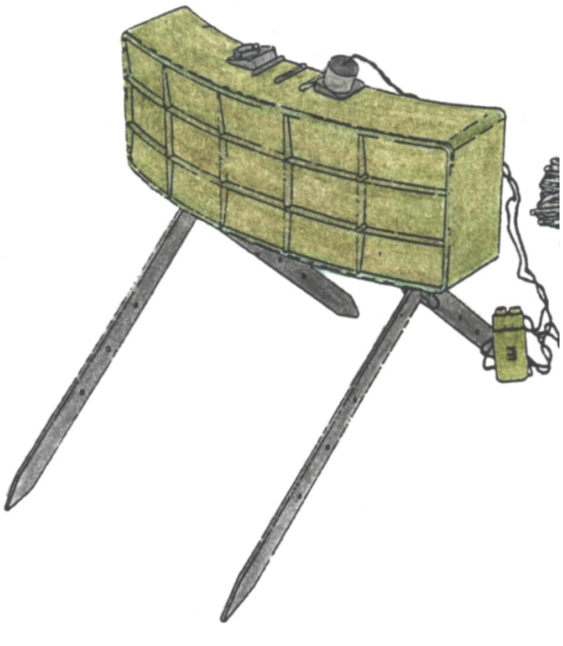
MON-50



MON-100 & 200

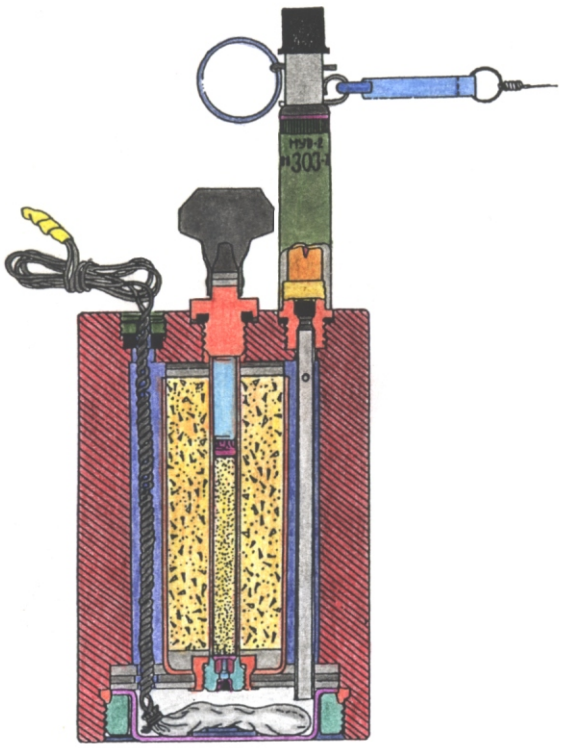


MON-90



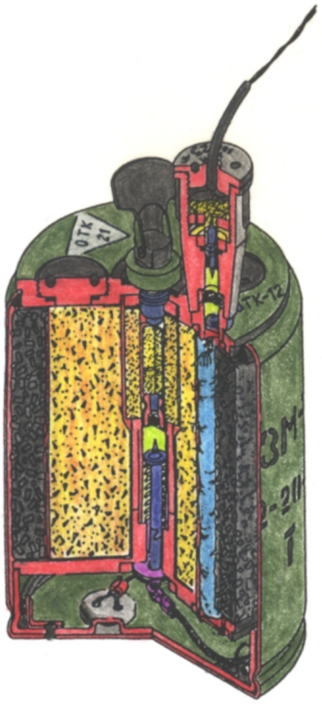
MRUD

A/P BOUNDING MINES



OZM-3

OZM-4



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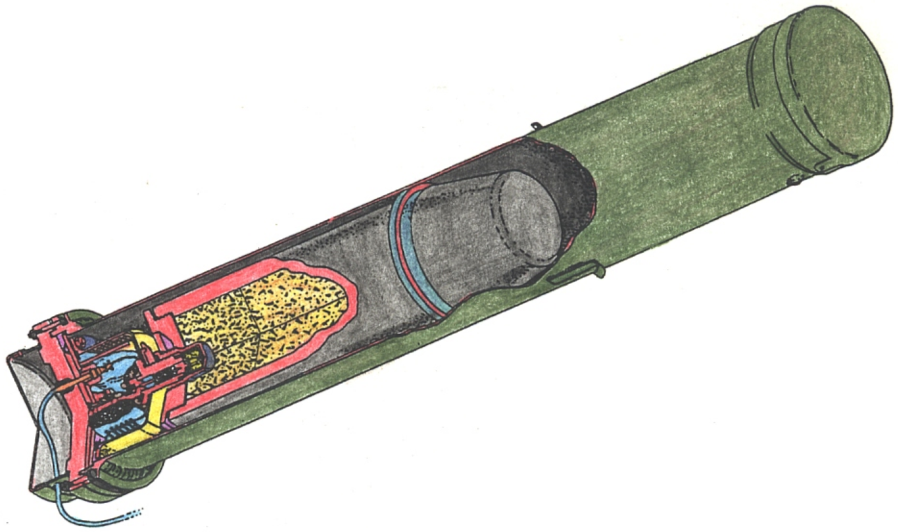
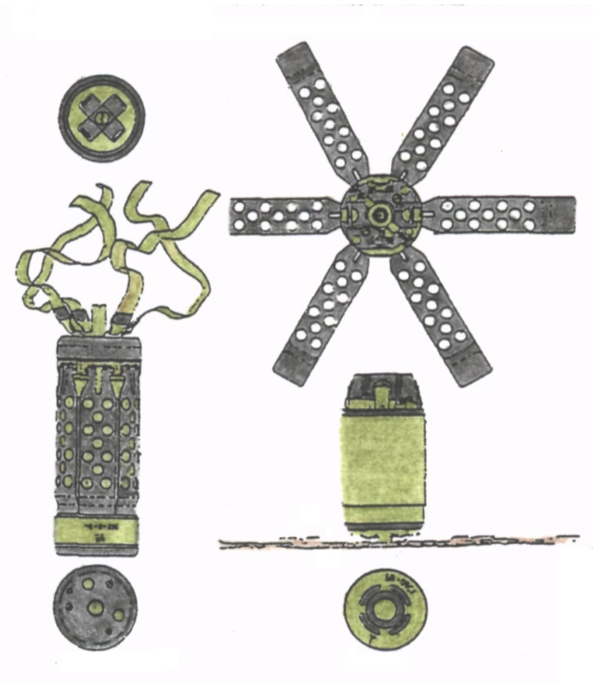
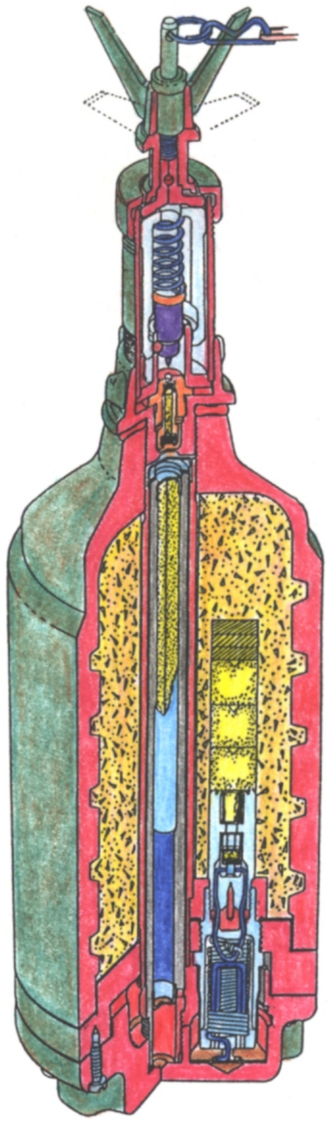


OZM-160

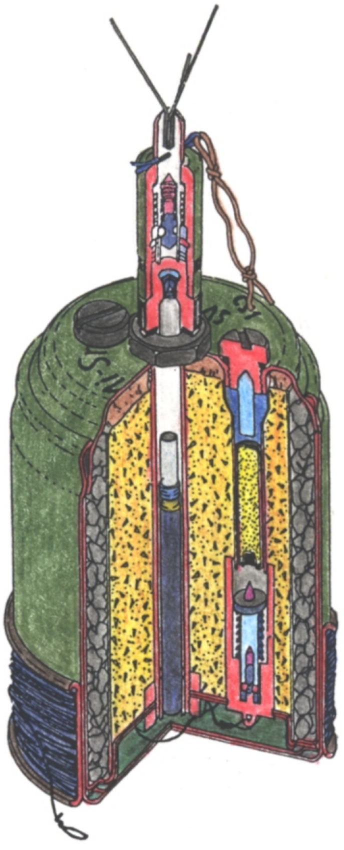
A/P BOUNDING MINES



POM-2S

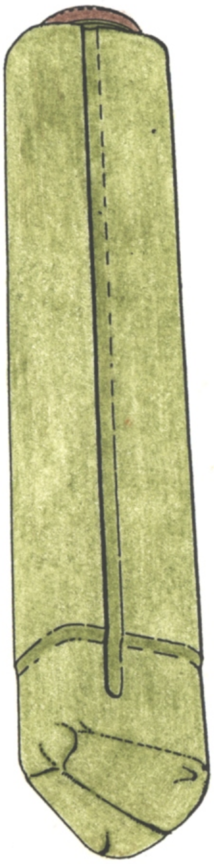


PROM-1

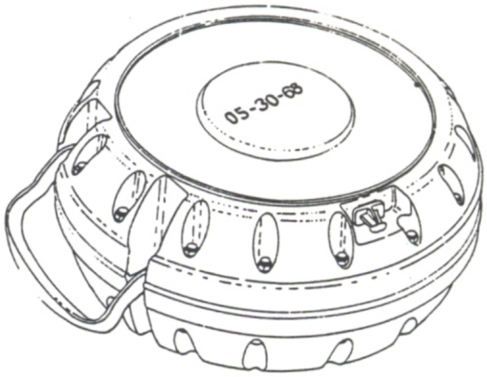


PP-Mi-Sr

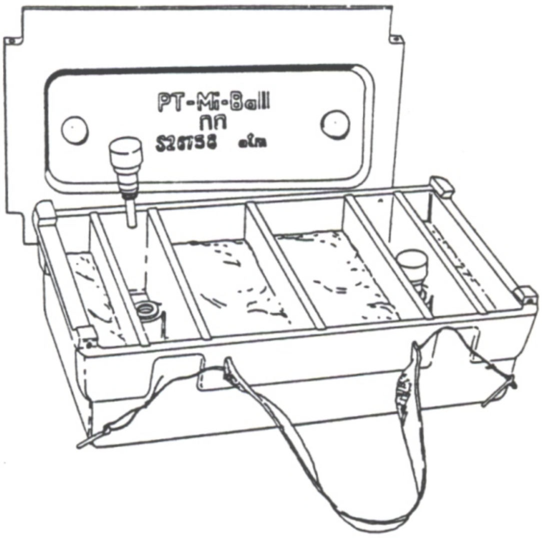
A/T BLAST MINES



PGMDM



PM-60



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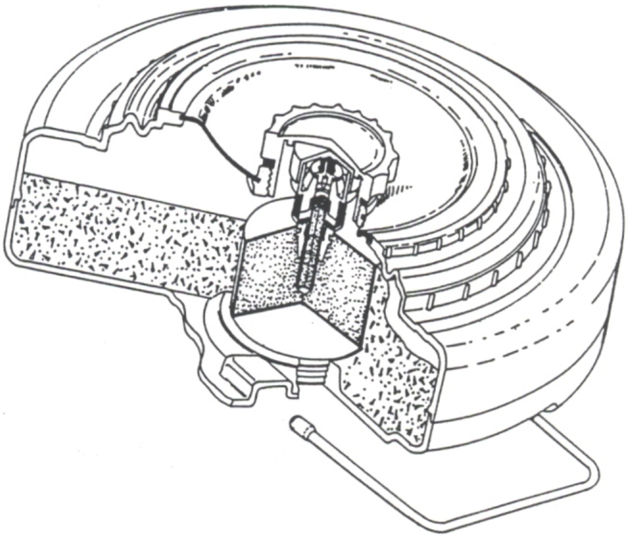

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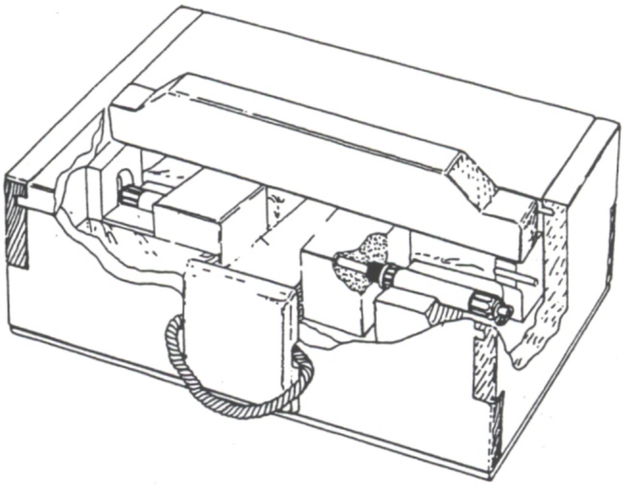
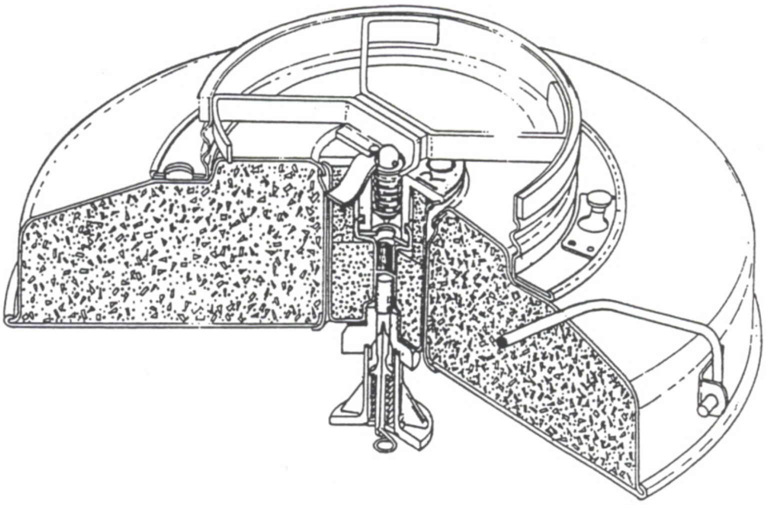


PT-Mi-D

A/T BLAST MINES



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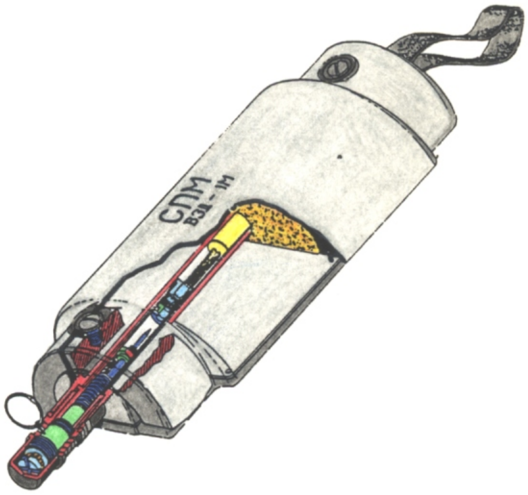

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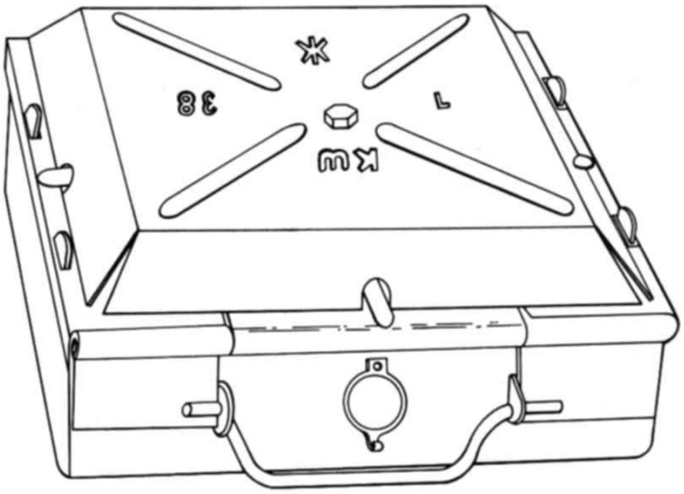
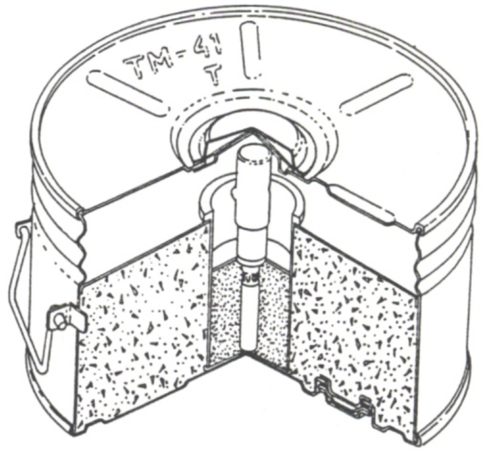
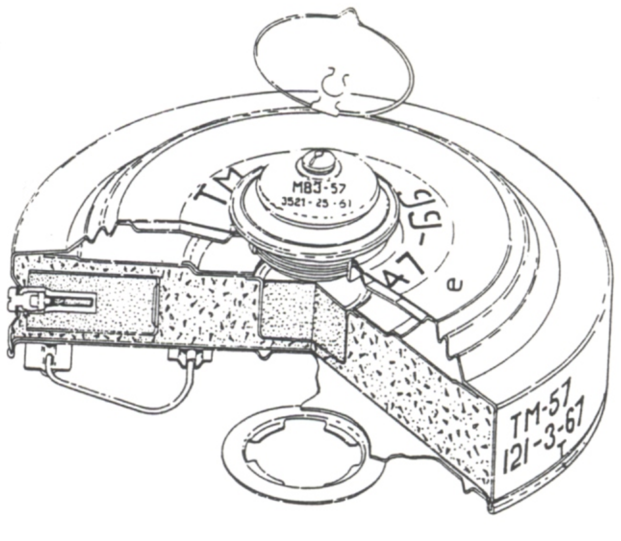


TM-38



TM-41 & TM-44



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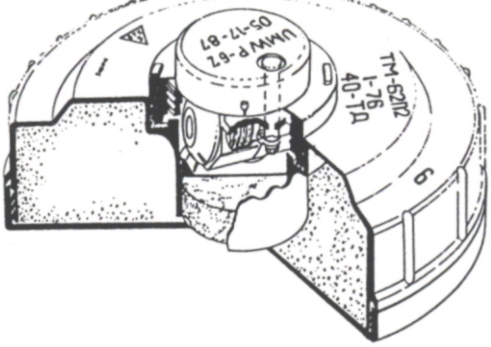
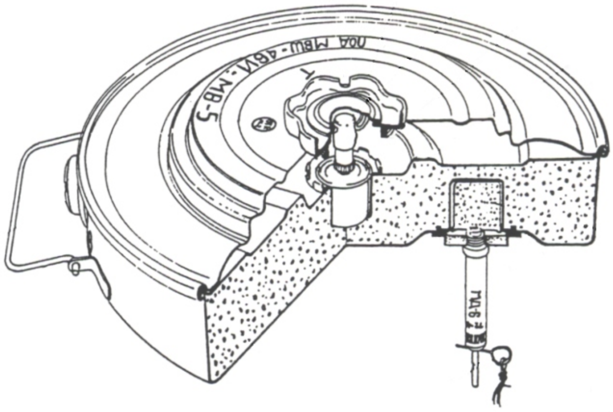


TM-62M & P

A/T BLAST MINES



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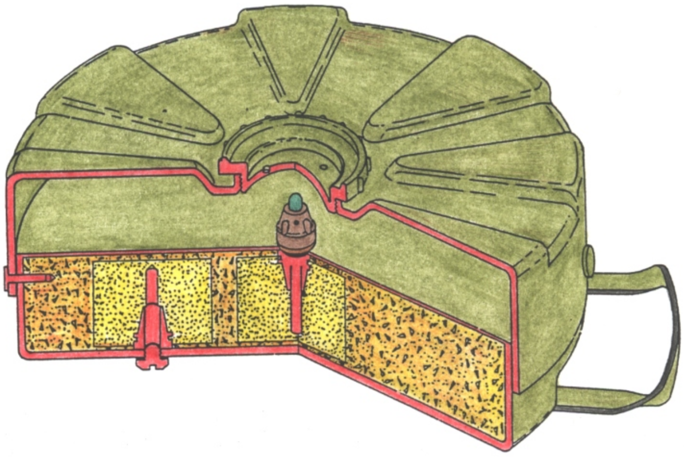

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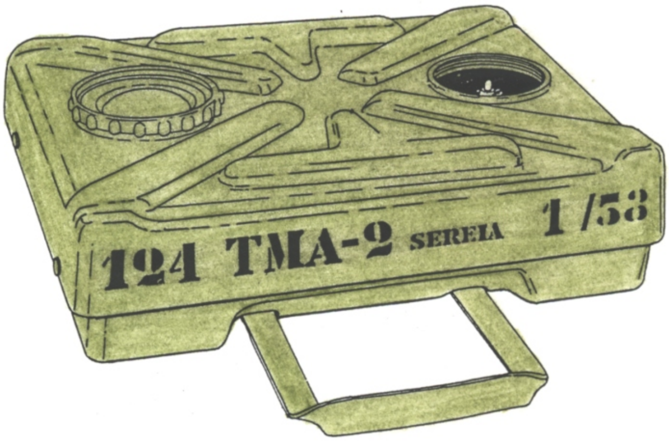

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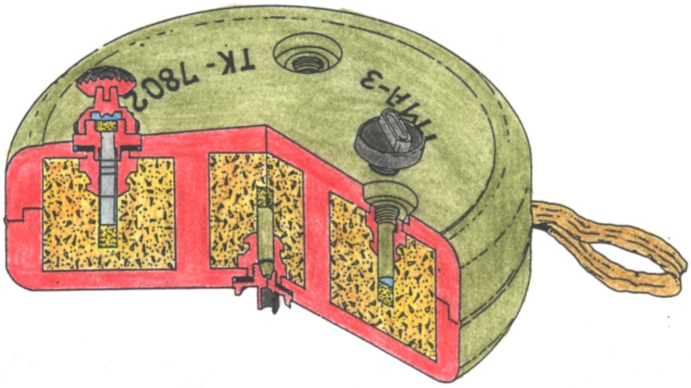

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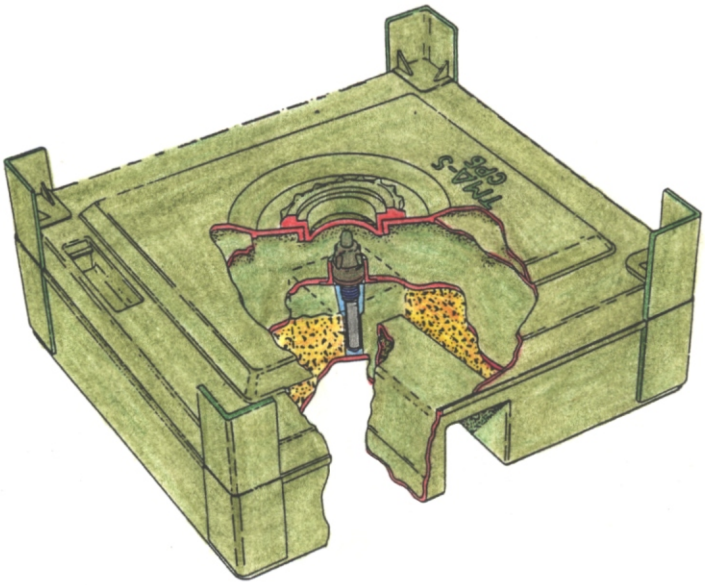

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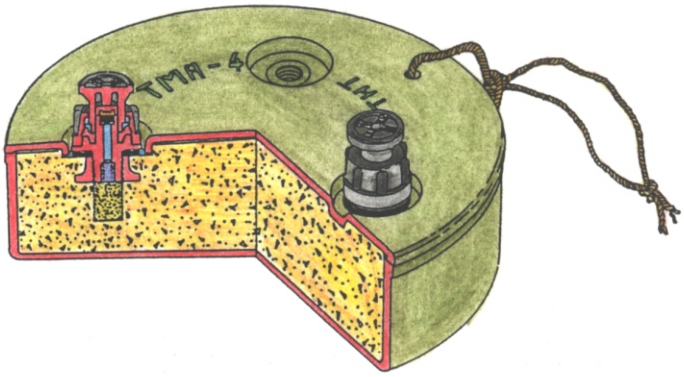
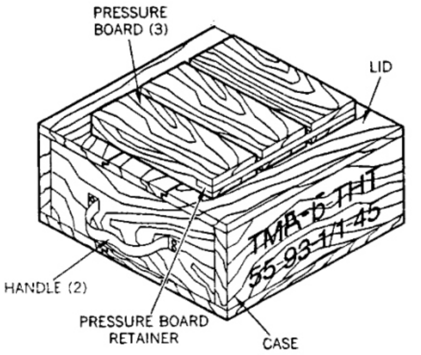


TMA-4

A/T BLAST MINES



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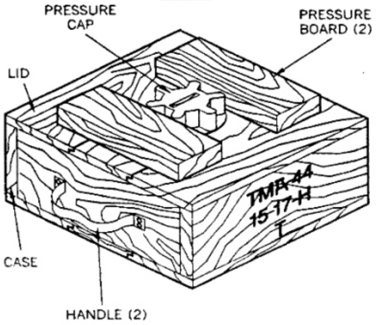
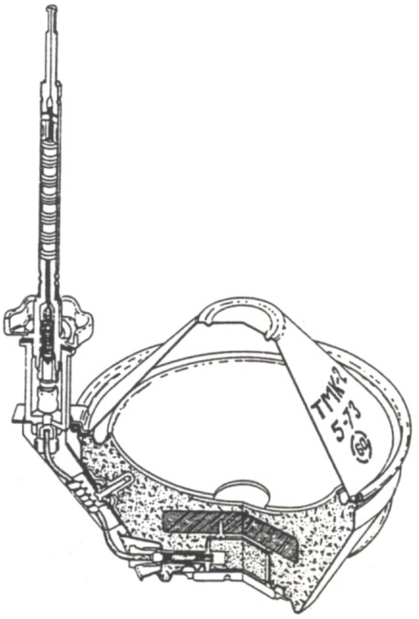


TMD-44

TMD-B & TMD-44



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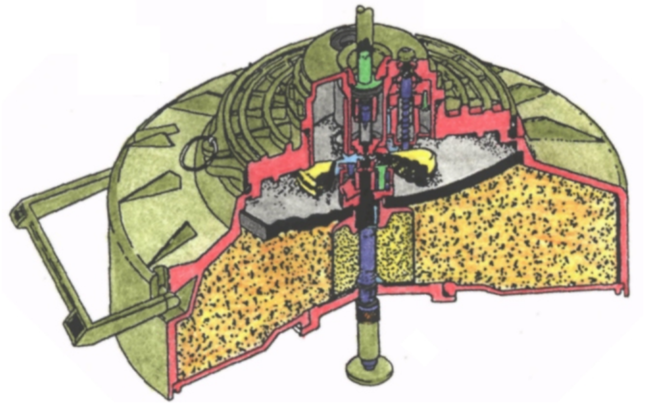
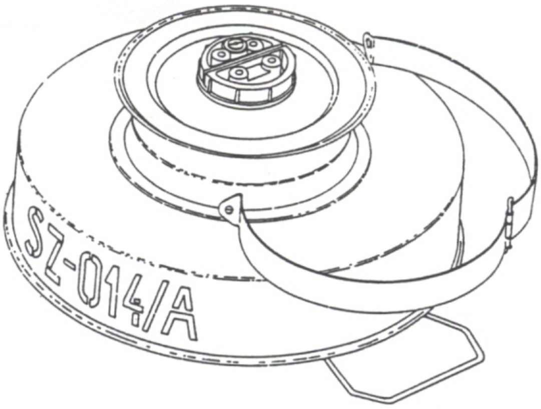
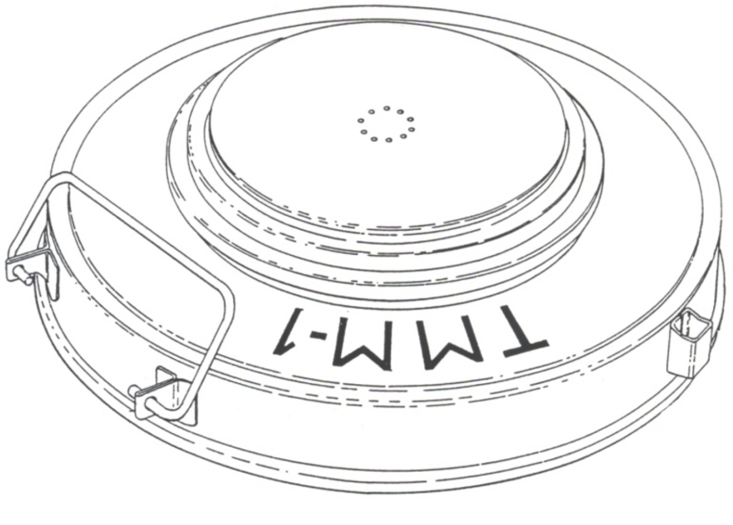


TMRP-6

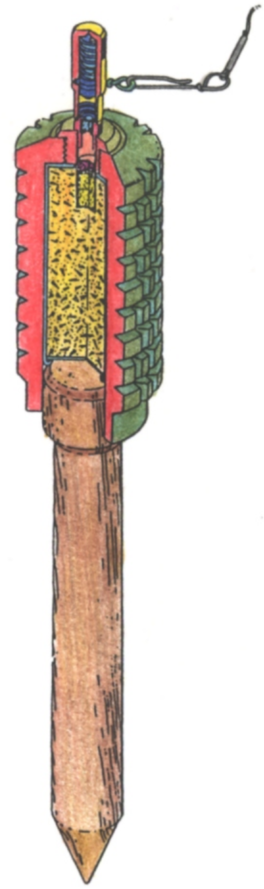


UKA-63



TMM-1

A/P STAKE MINES



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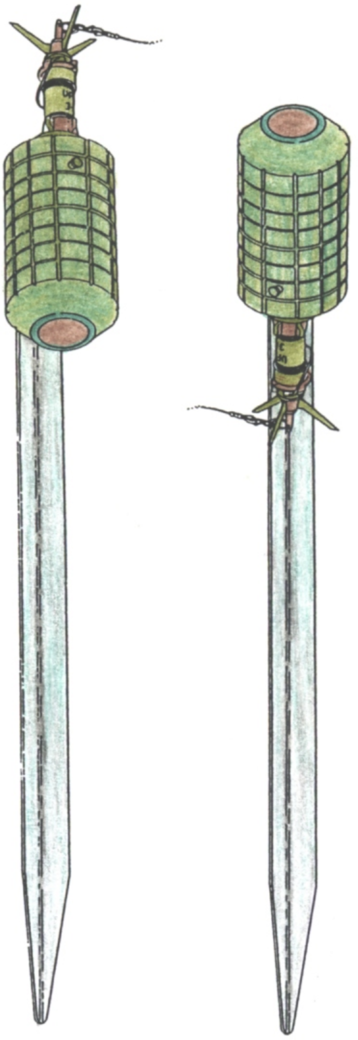

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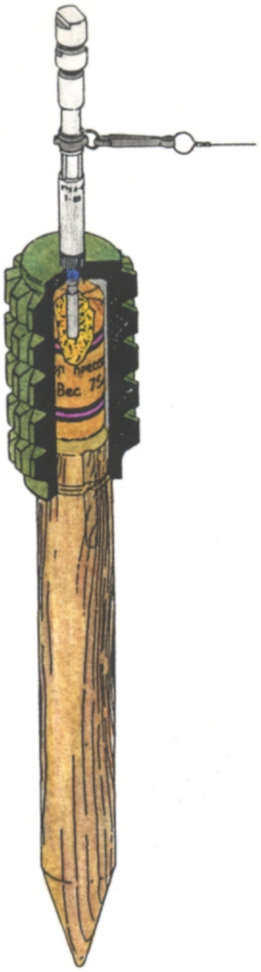
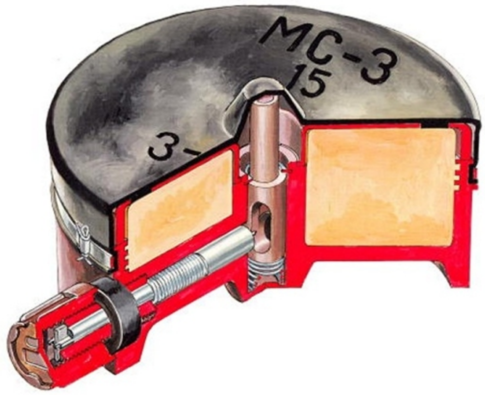


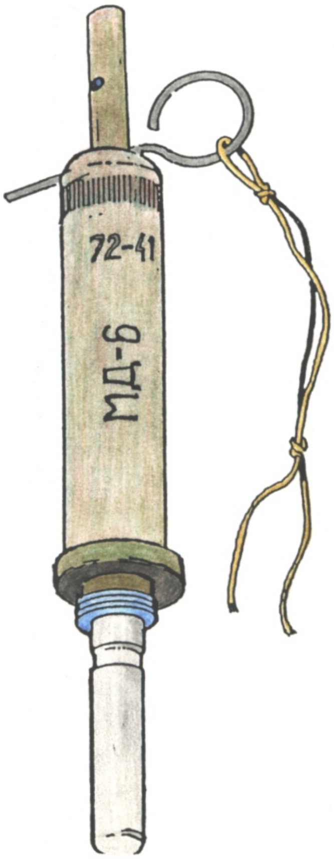
POMZ-2

ANTI-LIFT

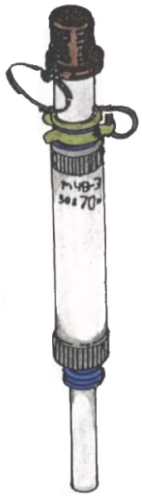


MS-3

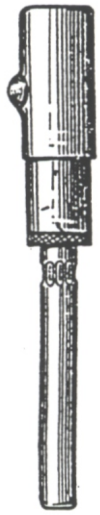
FUZES



MUV



MUV-2
MUV-3



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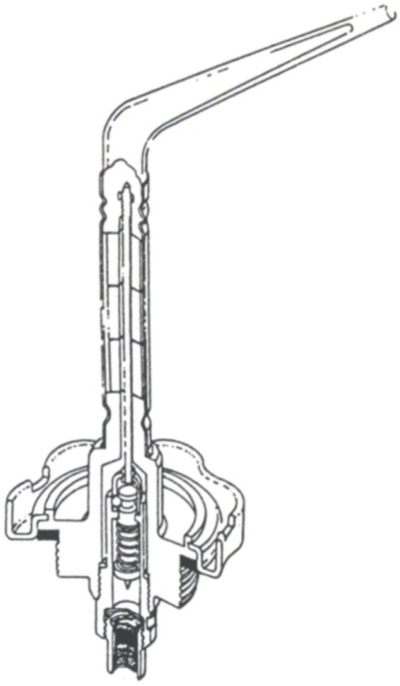

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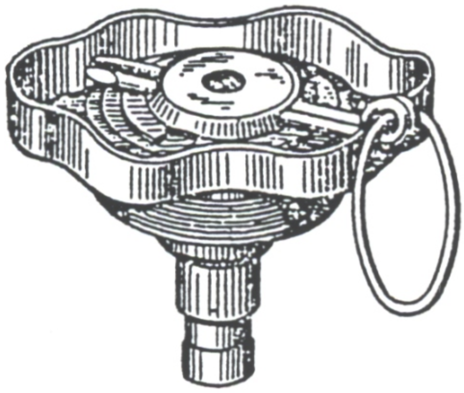

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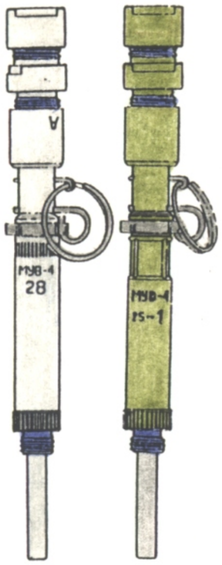

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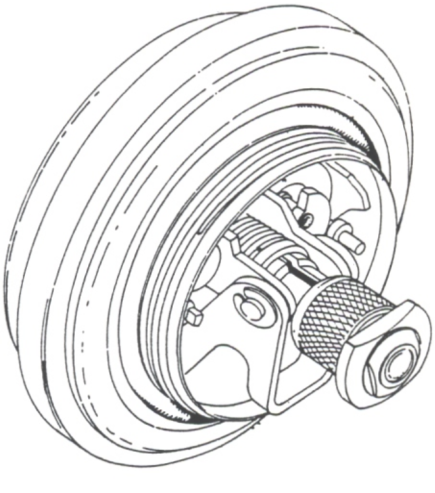

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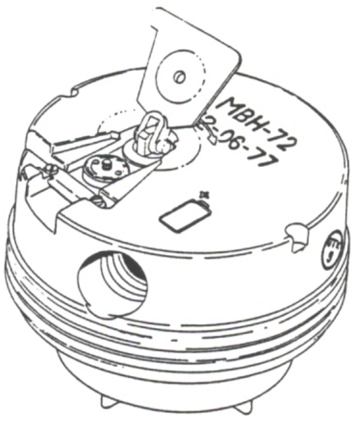
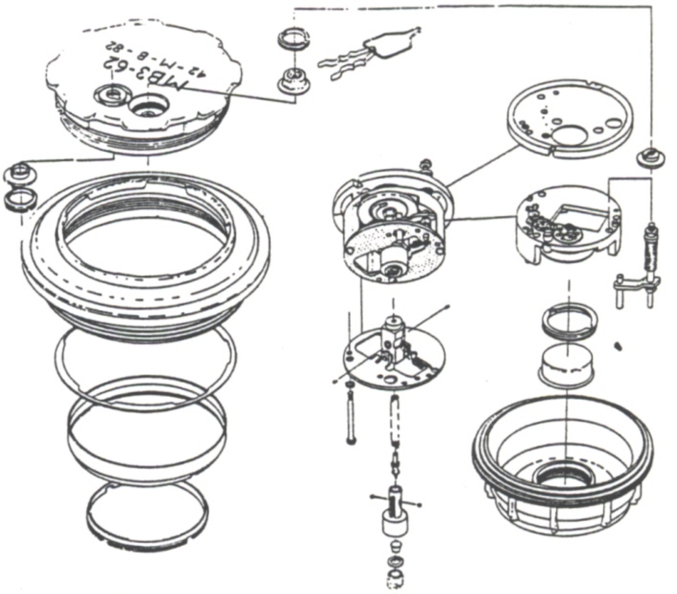
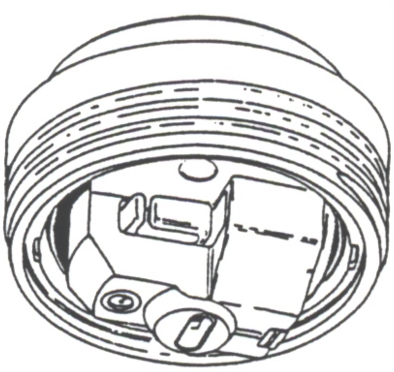


MVN-72

FUZES



MVZ-62



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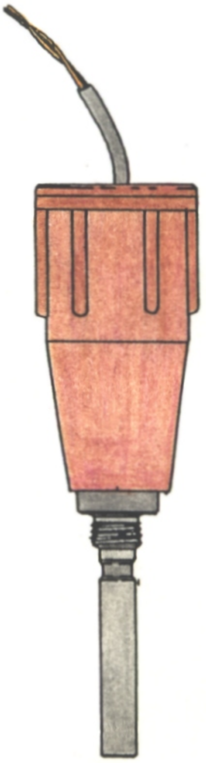
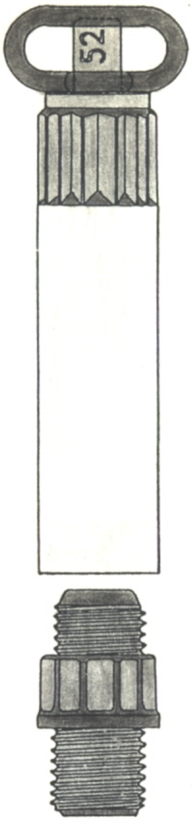
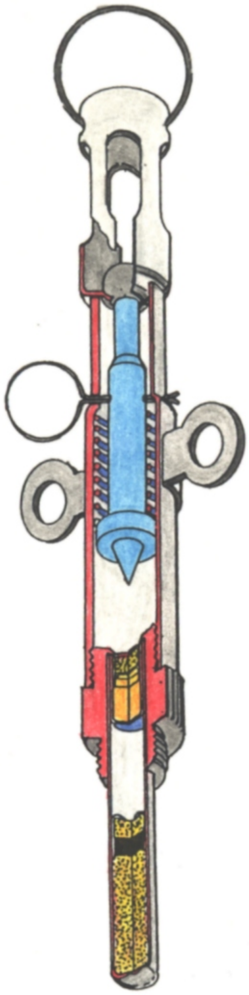


NM

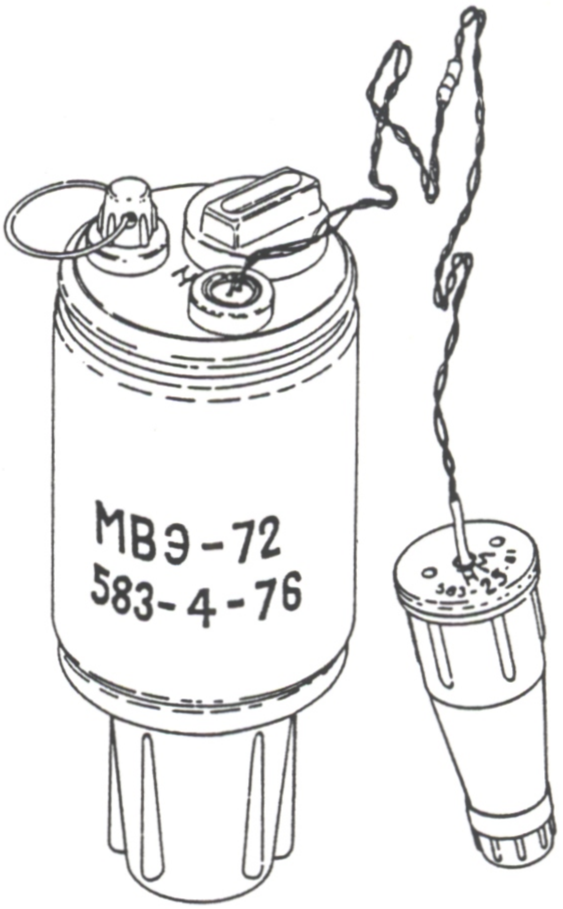


RO-1

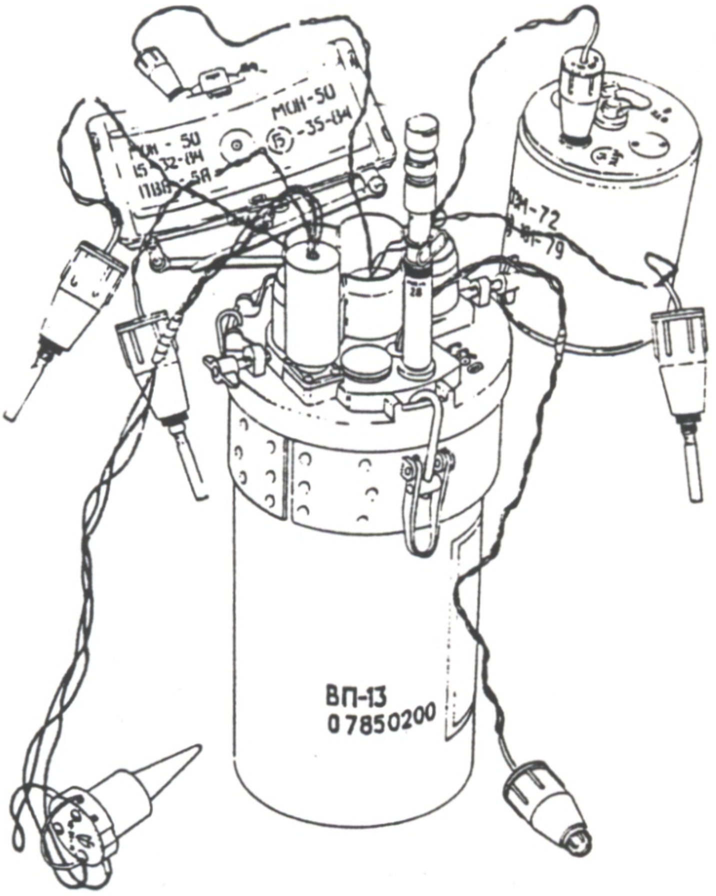


VPF

INITIATORS & REMOTE CONTROL



MVE-72



VP-13

KNOWN MINE MARKINGS WITH MEANINGS

CYRILLIC	NATO	MEANING
ТМН	TMN	ANTI-TANK MINE WITH ANTI-HANDLING FUZE
ТМК	TMK	SHAPED CHARGE ANTI-TANK MINE
ПМН	PMN	ANTI-PERSONNEL MINE TREAD OPERATED
ПМД-6М	PMD-6M	ANTI-PERSONNEL MINE TYPE 6 MODERNISED
ДМЗ	POMZ	FRAGMENTATION ANTI-PERSONNEL MINE - OBSTACLE
ОЗМ	OZM	FRAGMENTATION OBSTACLE MINE
ТМД-Б	TMD-B	ANTI-TANK MINE - WOODEN - LARGE
ТМ	TM	ANTI-TANK MINE
УНТМ	UITM	TRAINING ANTI-TANK MINE
МПМ	MPM	PISTOL ROUND MINE MODERNISED
МОН	MON	DIRECTIONAL FRAGMENTATION MINE
УВ	UV	PULL FUZE
ИУВ	MUV	MINE FUZE PULL
ВПФ	VPF	ALWAYS PULL FUZE
МВ	MV	MINE FUZE (PERCUSSION)
МВМ	MVM	MINE FUZE MODERNISED
ВЗ	VZ	FUZE or BOOSTER
ЧВЗ	ChVZ	CLOCKWORK FUZE or BOOSTER
ЗХЗ	EKhZ	ELECTRO CHEMICAL FUZE
ЧЗ	ChZ	CLOCKWORK FUZE
ЧМВ	ChMV	CLOCKWORK MINE FUZE
МВШ	MVSh	TILT ROD FUZE
ЗТ	ZT	SAFETY FUZE LIGHTER
ЯМ	YaM	BOX (WOODEN) MINE ANTI-TANK (OLD DESCRIPTION)
ТМБ	TMB	PAPER (TAR) ANTI-TANK MINE
Б	B	LARGE or PAPER
В	V	FUZE (EXPLODER)
Д	D	WOODEN
З	E	ELECTRICAL (AS IN Ekh - ELECTRO-CHEMICAL)
Э	Z	OBSTACLE or ELECTRIC CIRCUIT CLOSER / CHARGE
К	K	SHAPED (CHARGE) or CONTAINER/(CARRIER
М	M	MINE, METAL or MODERNISED
Н	N	ANTI-HANDLING, DIRECTIONAL or TREAD OPERATED
О	O	FRAGMENTATION
П	P	ANTI-PERSONNEL or PLASTIC
С	S	SELF DESTRUCT, SURPRISE ATTACK (BOOBY TRAP) or CONCENTRATED
Т	T	ANTI-TANK or TNT (FILLER)
У	U	TRAINING
Ф	F	FOUGASSE, AIR DROPPED or EXPLOSIVE
Х	Kh	CHEMICAL
Ч	Ch	CLOCKWORK
Ш	Sh	TILT ROD
Я	Ya	BOX or ANCHORED
Р	R	RIVER DEMOLITION, ANT-HANDLING (RA)

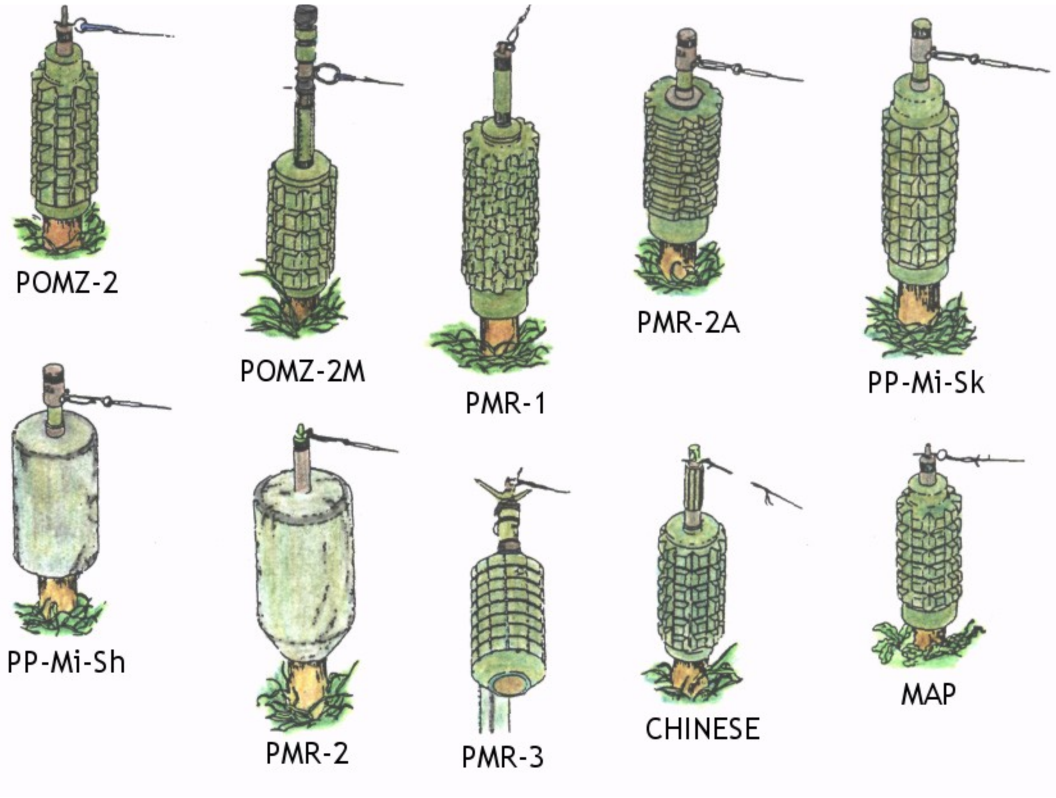
CZECH MARKINGS AND MEANINGS

PP	ANTI-PERSONNEL
PT	ANTI-TANK
MI	MINE
D	WOODEN
K	METAL
Ba	PLASTIC
Sr	BOUNDING
Sk	STAKE FRAGMENTATION
Sb	STAKE FRAGMENTATION (CONCRETE)
Cr	TRAINING
RO	MECHANICAL MINE FUZE

YUGOSLAVIAN MARKINGS AND MEANINGS

PM	ANTI-PERSONNEL
TM	ANTI-TANK
M	METAL
A	ANTI-MAGNETIC (PLASTIC)
D	WOODEN
R	ANTI-PERSONNEL STAKE
RO	BOUNDING (eg PROM)
S	TRAINING
U	FUZE (eg UTMA -PLASTIC ANTI-TANK MINE FUZE)
H	CHEMICAL FIRE (eg UTMAH - PLASTIC ANTI-TANK MINE CHEMICAL FUZE)

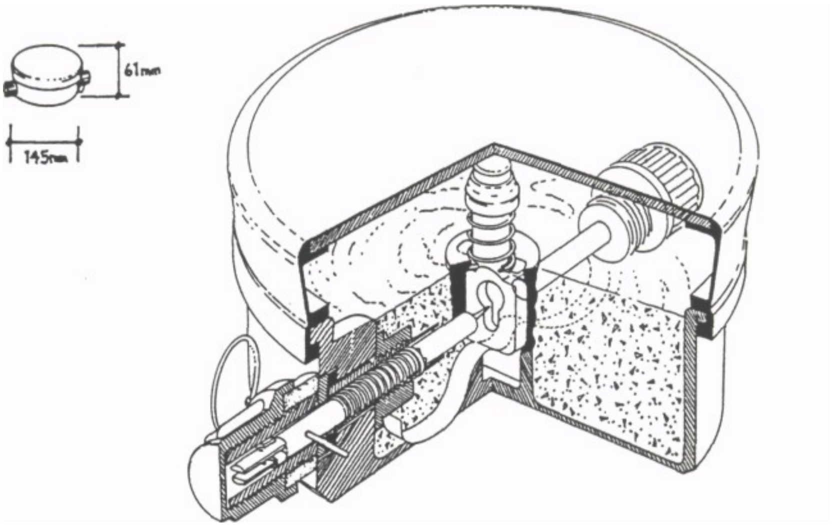
STAKE MINE COMPARISON CHART



Type	Country	Rows of frag.	Weight (kg)	Diam (mm)	Height (mm)	Charge (gr)	Pull (kg)	Fuze
POMZ-2	USSR	6	2,0	60	135	75	1	MUV/VPF
POMZ-2M	USSR	5	1,7	60	111	75	1	MUV-2/4/VPF
PP-Mi-Sk	CZECH	5	1,6	60	137	75	1	RO-1/UPM-1
PP-Mi-Sh	CZECH	*	2,1	75	140	75	1	RO-1
PMR-1	YUGO	9	2,0	80	120	75	2-12	UPM-1
PMR-2	YUGO	*	2,2	80	120	75	2-12	UPM-1
PMR-2A	YUGO	9	1,7	66	132	100	3	UPM-2A
PMR-3	YUGO	8	N/K	75	N/K	410	3	UPMR-3
CHINESE	CHINA	6	1,4	60	160	N/K	9-18	MUV/VPF TYPE
MAP	KOREA	5	2,6	60	107	75	1	MUV/VPF TYPE

*** DONATES CONCRETE WITH STEEL FRAGMENTS**

GYATA A/P PRESSURE OPERATED BLAST MINE HUNG



Description

GYATA is a Hungarian copy of the Soviet PMN and though very similar there are some noticeable differences. The mine body is of brown Bakelite, the top half having a black rubber cover. GYATA has two possible delay to arming times 1 ½ and 2 ½ minutes. The explosive content being even greater than the PMN will tend to lead to fatal injuries.

Technical Specification

Explosive content: 300 gr TNT
Total weight: 520 gr
Activating pressure: 5 kgs
Detection: Locator, Visual, Probe
Fuze: Integral, cocked striker, delayed arming

Method of Operation

When the safety pin is withdrawn the pressure of the firing pin spring causes a steel wire to start cutting through a lead delay strip (identical in principle to the MUV-2 igniter). After a delay of either 1 ½ or 2 ½ minutes the wire cuts through the lead strip and allows the striker to move forward to be retained by a step in the actuating plunger. After this stage the application of 5kgs or more pressure to the pressure plate will depress the actuating plunger, releasing the striker which fires the detonator which in turn detonates the main charge.

Arming

Excavate cavity for mine to allow 2 - 4 cm of spoil coverage when buried. Screw in detonator plug (unlike the PMN, the detonator is an integral part of this plug). Place mine in prepared hole and partially cover. Remove safety pin. Carefully cover and camouflage mine being careful not to exert any pressure on the pressure plate. The mine will be armed 1 ½ or 2 ½ minutes after the safety pin is removed

Neutralizing

This mine cannot be neutralized, the forward motion of the striker prevents safety pin replacement

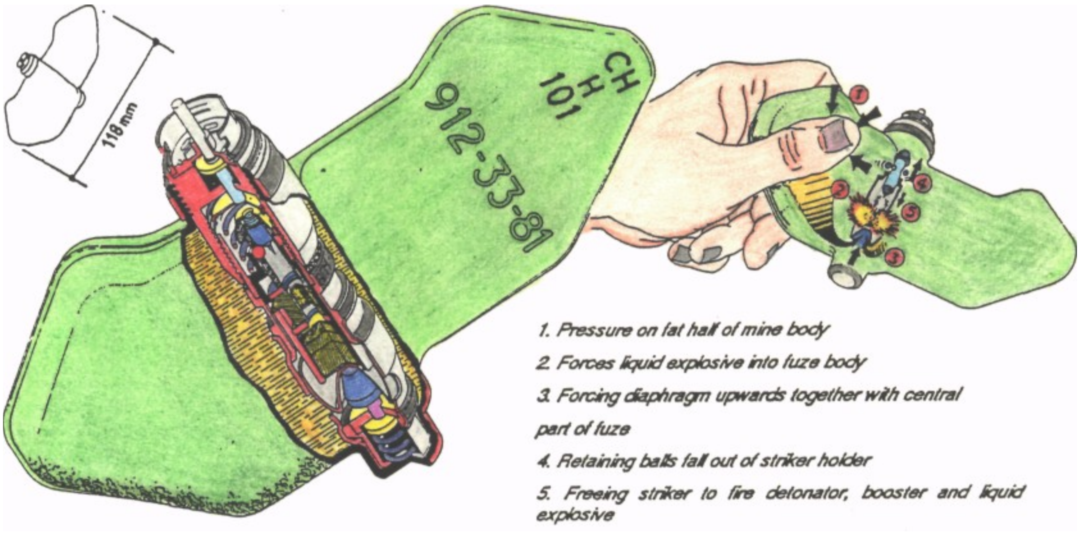
Disarming

Uncover the mine checking all around and underneath for booby traps or pull mine.

CAUTION

Do not apply any pressure to rubber pressure plate. Holding the mine by the Bakelite sides only, unscrew and remove the detonating plug. Having removed the plug and detonator, the striker assembly can be removed by depressing the pressure plate to fire the striker out through the detonator orifice towards the ground.

PFM-1 A/P SCATTER ABLE PRESSURE BLAST MINE USSR



1. Pressure on flat half of mine body

2. Forces liquid explosive into fuze body

3. Forcing diaphragm upwards together with central part of fuze

4. Retaining balls fall out of striker holder

5. Freeing striker to fire detonator, booster and liquid explosive

Description

The PFM-1 is made from low density polythene. The body is bulbous at one end containing the main charge with the fuze running through the central section, the rest of the body is a flat section which acts as a stabiliser. The mine comes in numerous colours including grass green, dark green, brown and white. It can be delivered by scattering from helicopters, aimable containers, 240 mm mortars and probably rocket systems. It is usually employed as an area denial weapon, in clusters ranging from 1000 to 6000 mines. A version designated PFM-1S is also produced which is designed to self destruct after approximately 24 hours.

Technical Specifications

Explosive Content: 35 - 40 gr liquid explosive
Total weight: 70 gr
Detection: Visual, locator(surface search in long grass)
Activating pressure: 5 kg
Fuze: MVDM or VGM-572 hydraulically operated ball retained cocked striker with delayed arming.

Method of Operation

When the mine is ejected from its delivery system a retaining clip is pulled away. This clip holds the mines in pairs and also prevents movement of the arming plunger. Without the retaining clip the arming spring can then move the arming rod and plunger through a viscous fluid filled dash pot. By the time the mine a fully armed it has landed on the ground. After arming, pressure applied to the bulbous body of the mine is transmitted via the liquid explosive to move a detent sleeve. The sleeve moves until the striker retaining ball falls away and the spring loaded striker initiates the detonator which in turn initiates the main charge. The fuze will fire after the application of 5 kg pressure. The load is not cumulative.

Arming

By ejection from delivery system and pulling away of retaining clip. Delay to arming by spring loaded damper moving through viscous liquid in dash pot.

Neutralising

This mine can not be safely neutralised.

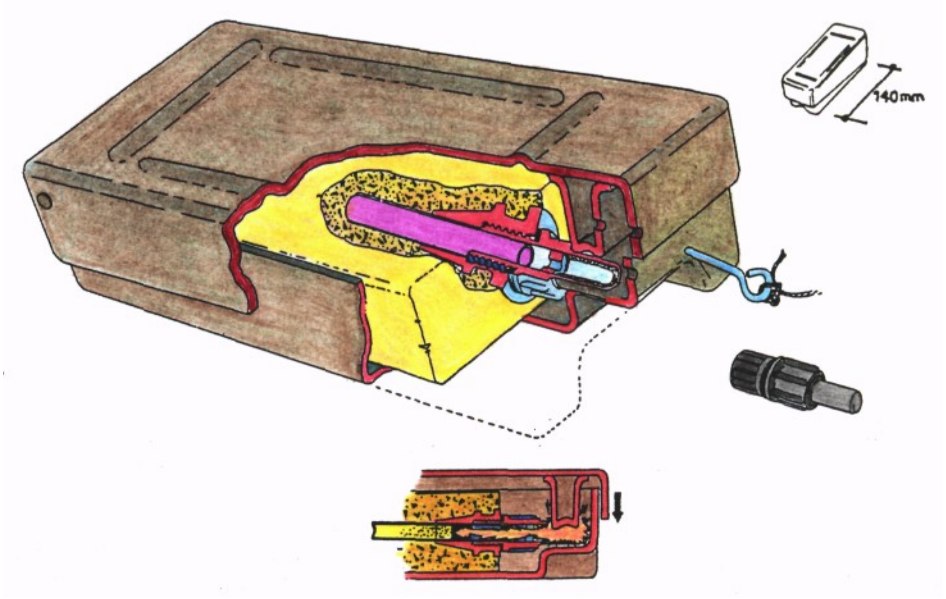
Disarming

Dealing with PFM-1 is invariably an area search problem which will rely on carefully planned and controlled visual searches backed up by other equipment and techniques such as the use of locators and grass burning for long grass and undergrowth. When mines are found they can be destroyed in situ or moved to a prepared burning pit by either picking up carefully by the flat stabiliser surface, or using a shovel or similar tool. When a suitable number have been collected the burning pit can be remotely ignited.

CAUTION

PFM-1S (self destruct) mines should not be handled. Those remaining after the self destruct time has elapsed should be destroyed remotely.

PMA-1 A/P PRESSURE OPERATED BLAST MINE YUGO



Description
PMA-1 a a plastic mine which is not detectable with metal detector locators. The mine consists of a plastic box with a hinged lid containing a fuze, detonator and explosive charge. A safety pin a fitted to prevent accidental closing of the mine lid and activation of the fuze. There are two drain holes in the bottom of the mine to allow water to escape.

Technical Specification
Explosive Content: 200 gr TNT
Total weight: 400 gr
Activating pressure: 3 -15 kg
Detection: Visual, probes
Fuze: UPMAH-1 chemical pressure fuze

Method of Operation
Application of the required pressure to the hinged lid causes the projection on the inside of the lid to crush the chemical capsule of the fuze, igniting the contents, which in turn actuates the No 8 detonator. The detonator initiates the main charge.

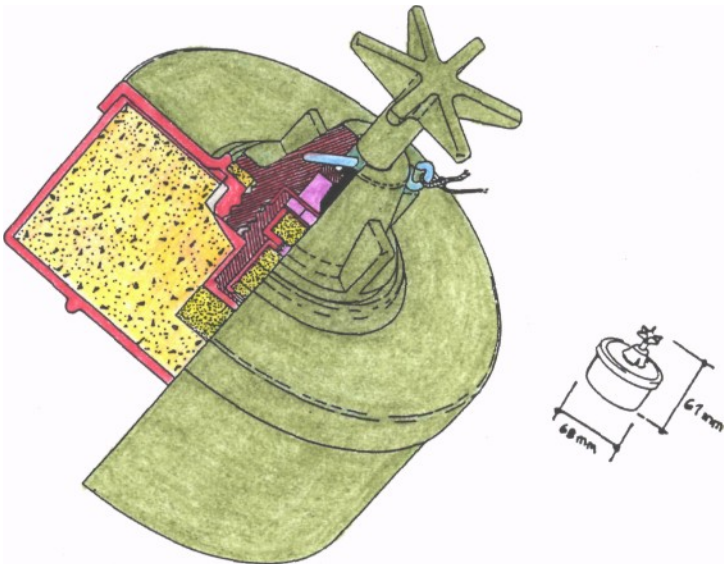
Arming
Excavate cavity for the mine to allow 2 - 4cm of spoil coverage when buried. Remove transit cap from fuze and fit No 8 detonator. Screw detonator and UPMAH-1 fuze into TNT block. Open mine body lid and insert safety pin. The TNT block and fuze assembly are then placed in the mine body so that the fuze rests on the protruding shoulder inside the mine body. The lid is then closed and the mine buried and camouflaged in the prepared hole. Finally the safety pin is withdrawn using the attached cord

Neutralizing
Can be achieved by simply raising the lid of the mine. Insert pin or similar to prevent lid from closing.

Disarming
Uncover, check for and remove any anti-lift devices or pull mine. Raise lid and insert pin, remove TNT block and fuze assembly. Unscrew fuze and detonator from TNT block. Remove detonator from fuze.

CAUTION
Improvised anti-lift device attached through drain holes.

PMA-2 PRESSURE OPERATED BLAST MINE YUGO



Description
PMA-2 is a non-metallic A/P mine with a round plastic body and non-metallic 6 horned pressure fuze. PMA-2 is claimed to be non-detectable with metal detector locators and proof against most explosive clearance methods.

Technical Specification
Explosive Content: 100 gr TNT
Total weight: 135 gr
Activating pressure: 9 -15 kg
Detection: Visual, probes, dogs
Fuze: UPMA-2 pressure operated, friction shear ring control

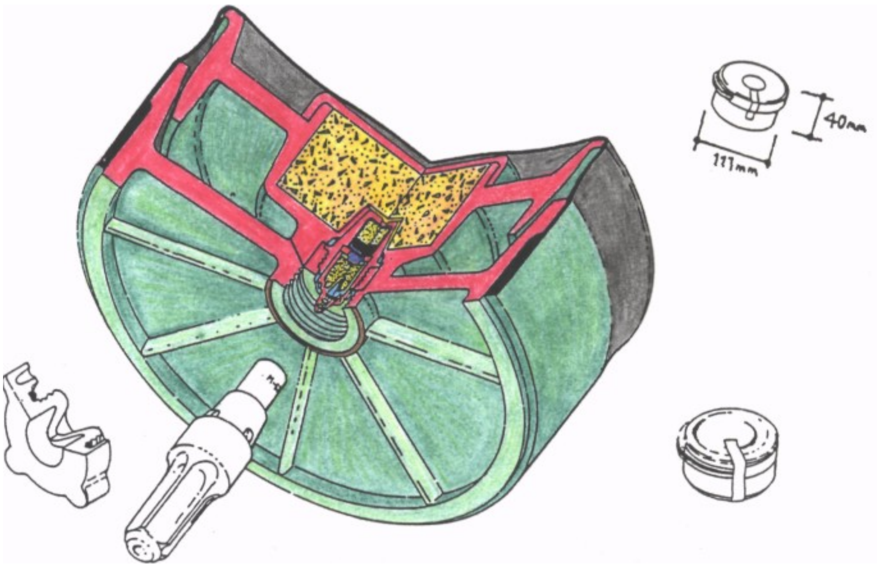
Method of Operation
Application of the required pressure to the top of the horned fuze causes a shear ring to break allowing the striker to be forced into the crush sensitive friction igniter composition which ignites and actuates the detonator which initiates the main charge.

Arming
Excavate a cavity for the mine to allow the fuze head to just protrude above the ground when the mine is covered. Remove transit cap from mine body and screw fuze into place, unwind cord attached to safety pin. Bury and camouflage mine in prepared hole. Finally remove safety pin using length of cord provided.

Neutralizing
Replace safety pin or insert suitable improvised pin.

Disarming
Uncover carefully checking for booby traps or pull mine. Insert safety pin or similar and unscrew and remove fuze from mine body.

PMA-3 A/P PRESSURE OPERATED BLAST MINE YUGO



Description

PMA-3 is a small circular mine constructed entirely of polystyrene and phono plastic. It is not detectable by metal detector locators and is thought to be resistant to many explosive clearance methods. Chemical fuzes are carried in a round plastic container to protect them.

Technical Specification

Explosive Content: 35 gr Tetryl
Total weight: 183 gr
Activating pressure: 8 - 20 kg
Detection: Visual, Probe, Dogs
Fuze: UPMA-3 chemical pressure fuze

Method of Operation

The application of the required pressure to the top of the mine will cause the top pressure plate to pivot about the fuze. This displacement causes the chemical fuze to be crushed and the resultant flash ignites the detonator which initiates the main charge.

Arming

A hole is excavated for the mine to allow for 2 - 4 cm of spoil coverage when buried. Unscrew the fuze retaining plug, fit fuze and replace retaining plug. Remove adhesive tape from the side of the mine and unwind the lanyard attached to the safety circlip pin. Place the mine in the hole, cover and camouflage. Pull lanyard to remove pin from safety circlip, this allows the circlip to spring open leaving the mine free to function.

Neutralising

This mine can not be safely neutralised.

Disarming

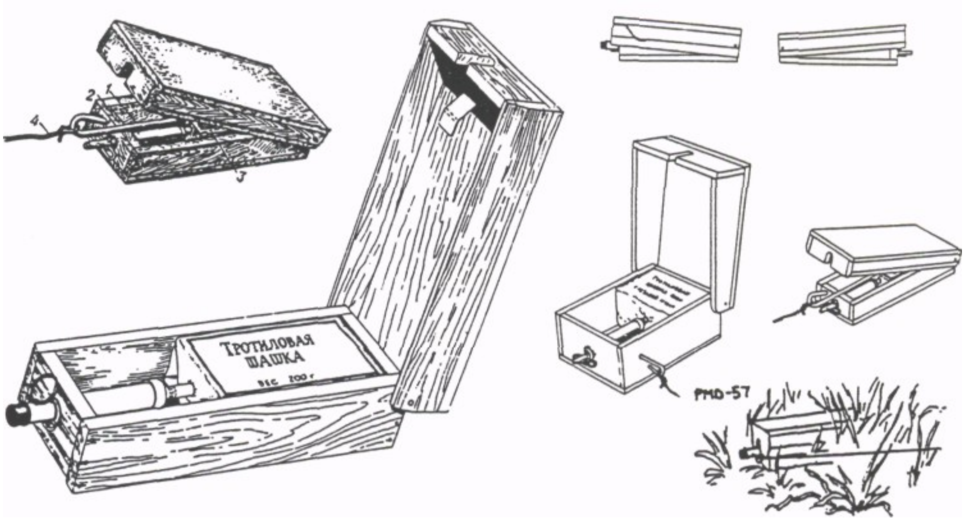
Uncover the mine carefully checking for booby traps or pull mine.

CAUTION

Do not apply any pressure to the pressure plate.

Holding the mine by the sides only, below the recess for the safety circlip, turn upside down and unscrew the fuze retaining plug. Remove the fuze, ideally by screwing a fuze safety cap onto it and withdrawing it from the mine.

PMD-6 A/P WOODEN PRESSURE OPERATED MINE USSR



Description

The PMD-6 is a simple WWII mine which is still often encountered. It has a natural wood, green, brown or black wooden case with a hinged id that overlaps the sides. A deep groove is cut in the front end of the lid so that it will fit over the igniter and rest on the striker retaining pin. Some models are fitted with a safety rod. Many variations of this mine have been encountered. These types of mines are for short term use only as they quickly corrode, rot or are eaten by insects.

Technical Specifications

Explosive Content: normally 200 gr TNT block
Total weight: 0.4 kg
Activating pressure: 1 - 2 kg (PMD-6) / 6 - 28 kg (PMD-6M)
Detection: Locators (approx. 0.4 mtr less with plastic MUV) Visual, Dogs, Probes
Fuze: MUV, MUV-2, 3 and 4

Method of Operation

PMD-6 mines have been used with a trip wire (see illustration). More usually pressure activated as follows. Pressure applied to the top of the mine closes the hinged lid. The striker retaining pin is pushed out by the downward movement of the edge of the lid. the striker initiates the percussion cap and the MD-2 detonator.which in turn initiates the main charge.

Arming

Lift the lid, insert TNT charge in box. Insert MUV and MD-2 detonator assembly through hole in front of box and into the charge. Turn striker retaining pin so that the loop is down. Place mine in prepared hole, close the lid. Carefully cover and camouflage with 4 cm of spoil. If there is a safety pin this should be removed from a distance with a length of cord.

Neutralising

Can be achieved by simply opening the lid of the mine, this should be done by pulling from a safe distance due to the risk of booby traps. If box is drilled for a safety pin, insert pin or similar to prevent lid from closing, or rotate igniter through 180 degrees to prevent pin being forced out

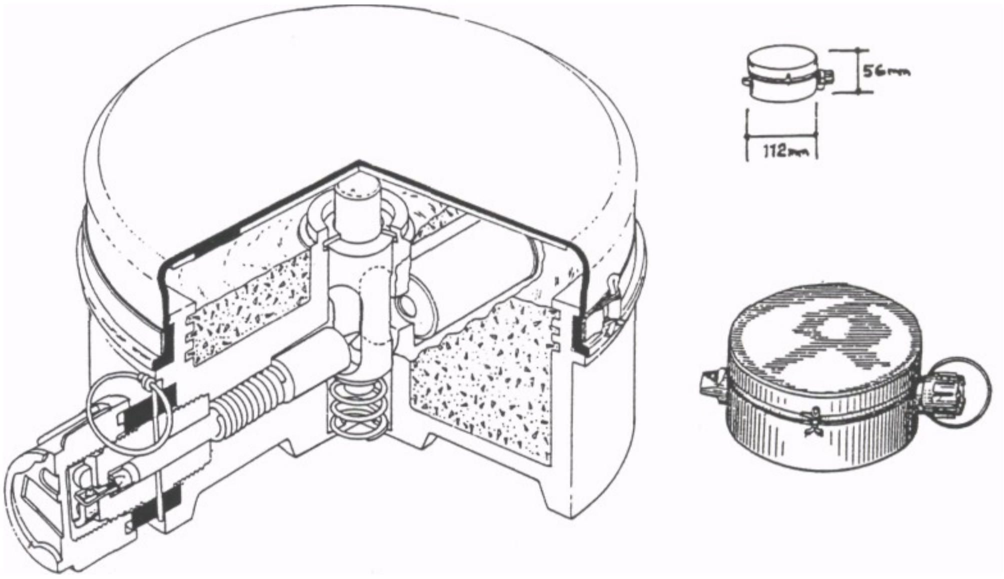
Disarming

Uncover checking all around and beneath for booby traps or pull mine. Open lid and remove igniter and detonator assembly. Unscrew the detonator from the igniter.

CAUTION

Anti-lift - Striker pin secured to stake beneath mine (see illustration).

PMN A/P PRESSURE OPERATED BLAST MINE USSR



Description

The body of the PMN is made of olive green or brown bakelite, the top half having a rubber cover which a secured by a thin metal band. The PMN has a 15 - 20 mm delay to arming and due to the large explosive content injuries from this mine can often be fatal. The Chinese version of the PMN is black in colour and known as Type 58.

Technical Specification

Explosive Content: 240 gr TNT
Total weight: 600 gr
Activating Pressure: 3 - 25 kg
Detection: Locator (approx. 0.5 mtr) Visual, Probe, Dogs
Fuze: Integral, cocked striker, delayed arming

Method of Operation

When the safety pin is withdrawn the pressure of the firing pin spring causes a steel wire to start cutting through a lead delay strip (identical in principle to the MUV-2 igniter). After a delay of 15 - 20 min the wire cuts through the lead strip and allows the striker to move forward to be retained by a step in the actuating plunger. After this stage the application of 6 kg or more to the pressure plate will depress the actuating plunger, releasing the striker which fires the detonator which in turn detonates the main charge.

Arming

Excavate cavity for the mine to allow 2 - 4 cm of spoil coverage when buried. Remove detonator plug and insert MD-9 detonator, replace plug. Place mine in prepared hole and partially cover. Remove safety pin. Cover and camouflage the mine being careful not to exert any pressure on the pressure plate. The mine will be armed 15 - 20 min after the safety pin is removed.

Neutralising

This mine cannot be neutralised, the forward movement of the striker prevents safety pin replacement

Disarming

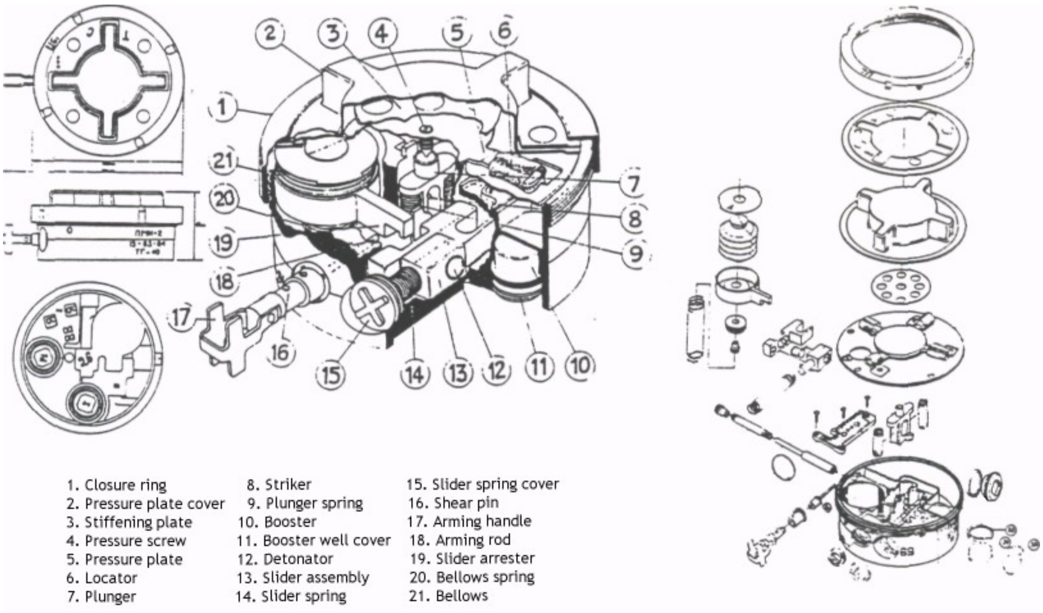
Uncover the mine checking all around and beneath for booby traps.

CAUTION

Do not apply any pressure to the rubber pressure plate.

Holding the mine by the bakelite sides only, unscrew the detonator plug and remove the detonator. Having removed the detonator the striker assembly can be removed by depressing the pressure plate to fire the striker out through the detonator orifice towards the ground

PMN-2 A/P PRESSURE OPERATED BLAST MINE USSR



Description

PMN-2 is designed as the replacement lor the PMN. Both mines are similar in size. The obvious features on the PMN-2 are the cruciform black rubber pressure plate and the colour. The body a of bright green injection moulded plastic. The PMN-2 has a complex bellows operated delay to arming system and is designed to be resistant to explosive clearance methods.

Technical Specification

Explosive Content: 100gr TNT/RDX
Total weight: 450 gr
Activating pressure: 6 kg
Detection: Locators (approx. 0.3m) Visual, Probes, Dogs
Fuze: Integral, cocked striker, delay to arming

Method of Operation

Twist the arming key, breaking the shear pin and pull out the arming key. This releases the bellows which are closed by spring pressure. As they close they free the detonator housing which slides across the mine until stopped by the activating plunger. When pressure is applied to the activating plunger the detonator assembly completes is movement aligning with the striker and booster. The striker carries forward under spring pressure to initiate the detonator which in turn initiates the booster followed by the main charge.

Arming

Excavate the cavity for the mine to allow for 2 - 4 cm of spoil coverage when buried. Place the mine in the hole and partially cover. Twist and pull out the arming key. Carefully cover and camouflage the mine. Do not exert any pressure on the pressure plate. The mine will be armed 2 - 3 min after removal of the key.

Neutralising

This mine cannot be neutralised, operation of the arming mechanism cannot be reversed.

Disarming

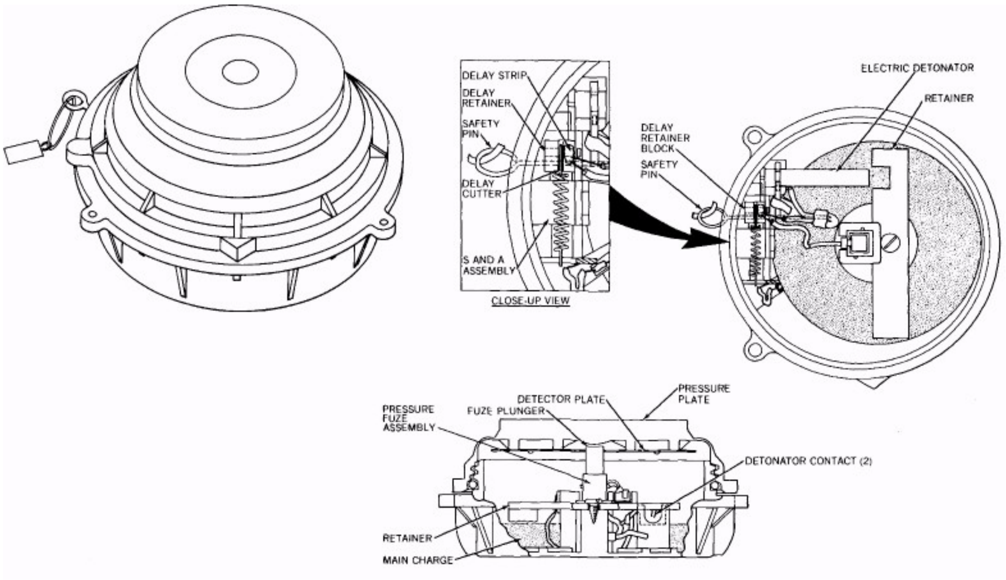
Uncover the mine checking all around and beneath for booby traps.

CAUTION

Do not apply any pressure to the rubber pressure plate.

Holding the mine by the the plastic body only, turn upside down and unscrew (anti clockwise) the booster plug using a square tool Remove the booster. This breaks the explosive chain but leaves the detonator capable of being fired (it will not initiate the charge). Unscrewing the detonator retaining plug and removing the detonator and spring ensures full safety. (This plug is bonded in and difficult to remove even with a special tool).

PPM-2 A/P PRESSURE OPERATED BLAST MINE GDR



Description

PPM-2 has a round black plastic body with radial strengthening ribs. On the flange around the circumference there are two lugs with holes, one often has a spring carrying clip fitted. The mine has an electrical fuze and has delayed arming. It is kept safe by a short circuit system which ensures that the detonator cannot fire until the mine is fully armed.

Technical Specification

Explosive Content: 110 gr TNT
Total weight: 371 gr
Activating pressure: 11 - 15 kg
Detection: Locator (up to 20 cm) Visual, Probe
Fuze: Integral piëzo-electric impulse with lead strip delay to arming

Method of Operation

When the safety pin is withdrawn a tension spring causes a metal edge to start cutting through a lead delay strip. After a delay of 1 ½ - 3 hours this cuts through the lead strip and allows the spring to pull the short circuit contact away from the firing circuit After this stage application of the required pressure to the pressure plate collapses the top of the mine and depresses the plunger on the piëzo-electric impulse generator. This generates an electric impulse which (now that the short circuit system has been removed) fires the electric detonator which detonates the main charge.

Arming

Unscrew top from mine, disconnect grey wire from end of safety pin and connect to electric detonator. Clip detonator into holder and replace mine top. Excavate cavity for the mine to allow for 2 cm of spoil coverage when buried. Place the mine in the hole and partially cover. Remove the arming pin and carefully cover and camouflage the mine being careful not to exert any pressure on the pressure plate. The mine will be armed 1 ½ - 3 hours after the safety pin is removed.

Neutralizing

This mine cannot be safely neutralized.

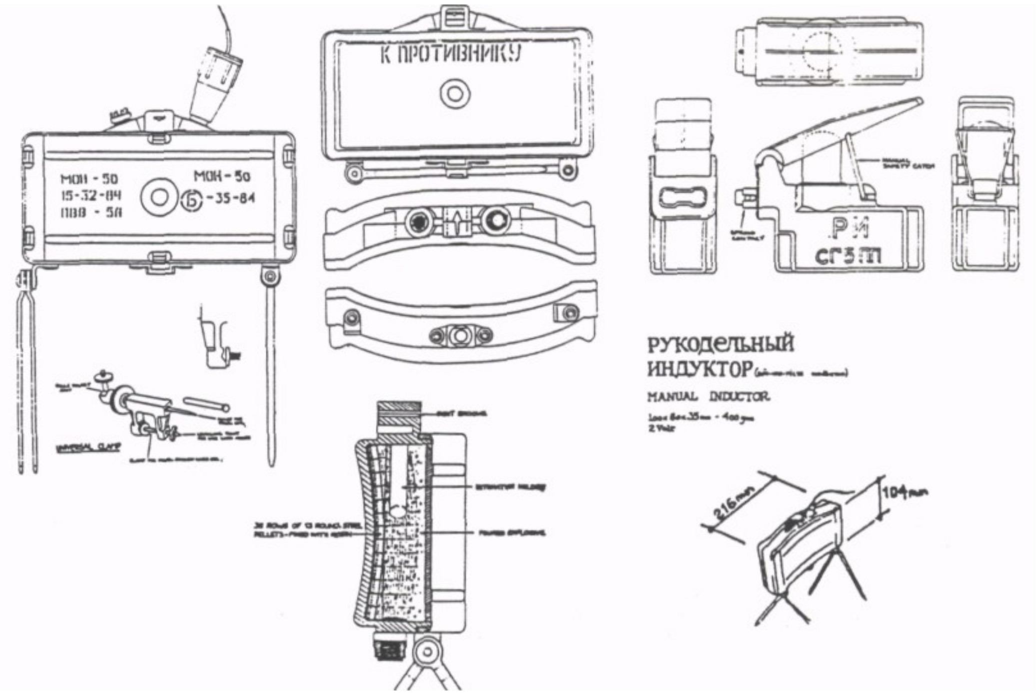
Disarming

Uncover the mine checking carefully all around and beneath for booby traps or pull the mine.

CAUTION

Do not apply any pressure to the pressure plate. Gripping the mine by the sides only, unscrew and remove the top half. (If the mine will not unscrew, cut the sealing gasket with scalpel or similar and pull away the sealing gasket with pliers or by hand. Now the mine can be unscrewed). Disconnect and remove detonator from firing circuit.

MON-50 A/P DIRECTIONAL FRAGMENTATION MINE USSR



Description

The MON-50 is a copy of the American M-18 "Claymore". It is made of grass green coloured injection moulded plastic and comes in a kit containing an adjustable mounting clamp, detonators and adaptors. Its lethal range is 50 mtr covering an arc of 54 degrees. The preformed fragments of segmented steel rod are bedded into a matrix in the convex front of the mine.

Technical Specification

Explosive Content: 0.7 kg plastic explosive
Total weight: 2 kg
Detection: Visual, trip wire feeler
Fuze: Trip: MUV-2, 3. and 4, VPF with detonating cord / Electrical: EDPr electric detonator or NM initiator and MD-5M detonator with command wire, VP-13, MVE-72

Method of Operation

Electrical command or electrical or mechanical victim operation causes the detonator in the detonator well to function initiating the main charge and spreading shrapnel over a 54 degree arc to its front

Arming

The mine can be laid using either the scissor legs, pressed into the ground or the adjustable clamp to mount the mine on timber or metal objects. When the mine is secure it is aimed using a 0.6 mtr high aiming mark at a range of 10 ms (see illustration). The initiation mechanism is then set up. Either a command wire with an EDPr electric detonator or NM initiator with MD-5M detonator, a trip wire and detonating cord system, MVE-72 fuze or VP-13 control unit The mine is then camouflaged, the detonator screwed into the mine and finally the safety mechanism removed from the initiation system.

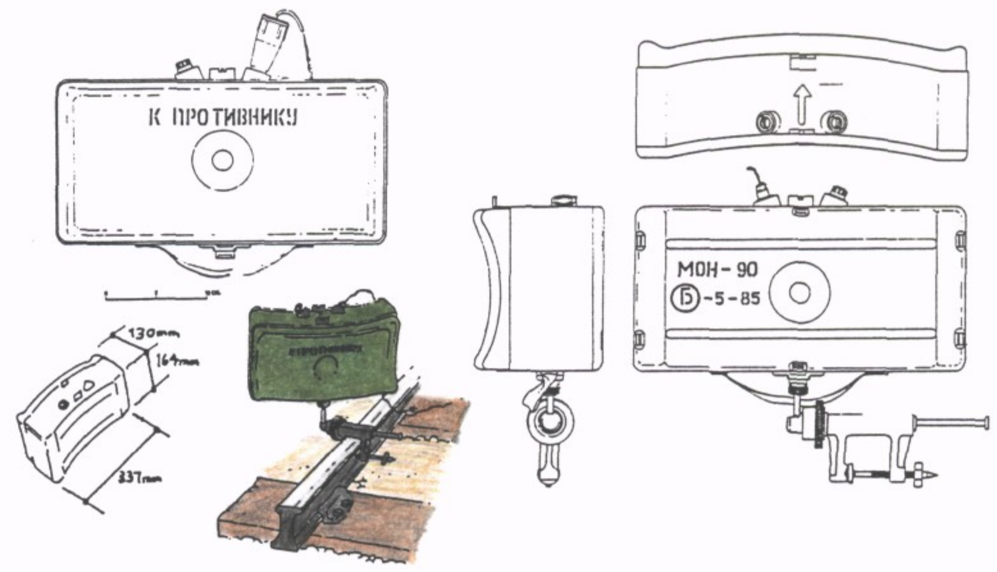
Neutralising

- Trip wire - Trace both ends of the trip wire checking for other trip wires and mines. When trip wire is cleared and confirmed as a simple trip wire cut any detonating cord inks, then cut trip wire 150mm from igniter and tie around igniter to secure pin (With VPF insert safety pin first).
- Electrical - Identify and deal with initiation mechanism (see VP-13 and MVE-72) or confirm command wire and cut wire.

Disarming

Unscrew and remove detonator or detonator and igniter assembly from mine. Remove detonator from igniter.

MON-90 A/P DIRECTIONAL FRAGMENTATION MINE USSR



Description
The MON-90 is a development of the MON-50, it is noticeably larger in all dimensions and probably designed to supercede the MOM-100 giving a wider lethal arc (50 - 60 degrees) at its maximum lethal range of 90-100 mtr. Like the MON-50 it 'a made of grass green coloured injection moulded plastic, with preformed fragments of segmented steel rod bedded into a matrix in the convex front of the mine.

Technical Specification
Explosive Content: 2 kg
Total weight: 10 kg
Detection: Visual, trip wire, feelers
Fuze: Trip: MUV.2,3, and 4, VFP with detonating cord / Electrical: EDPr electric detonator or NM initiator and MD-5M detonator with command wire. VP-13. MVE-72

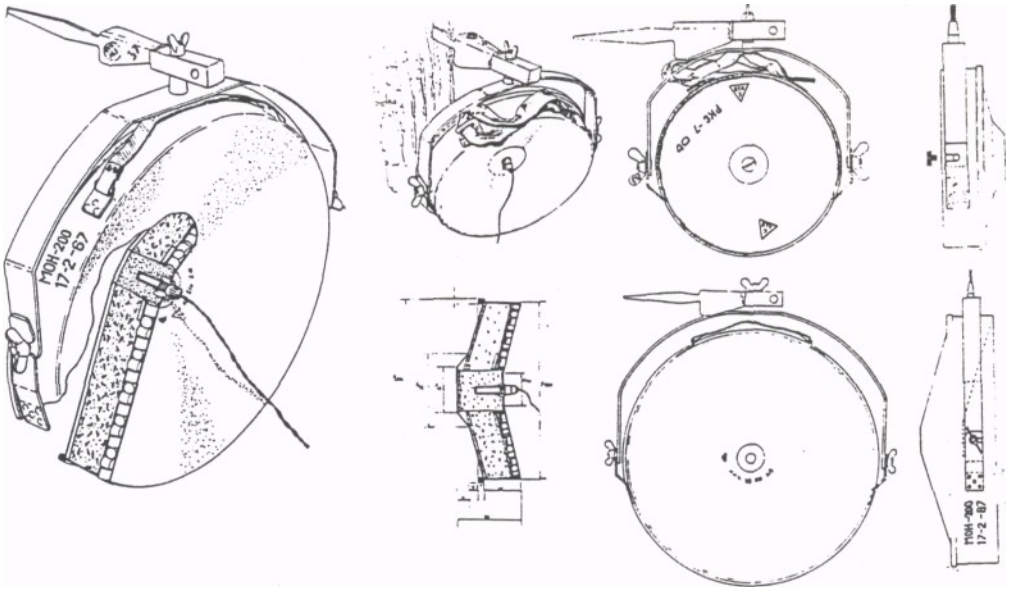
Method of Operation
Electrical command or electrical or mechanical victim operation causes the detonator in the detonator well to function initiating the main charge spreading shrapnel over the lethal area to its front

Arming
The mine is laid using the adjustable clamp to mount the mine on timber or metal objects. When the mine is secure it is aimed using a 0.6 mtr high aiming mark at a range of 10 m (see MON-50). The initiation mechanism is then set up. Either a command wire with an EDPr electric detonator or NM initiator with MD-5M detonator, a trip wire and detonating cord system, an MVE-72 or VP-13 control unit. The mine is then camouflaged, the detonator screwed into the mine and finally the safety mechanism removed from the initiation system.

Neutralising
- Trip wire - Trace both ends of trip wire checking for other trip wires and mines. When trip wire is cleared and confirmed as a simple trip wire cut any detonating cord links, then cut trip wire 150 mm from igniter and tie around igniter to secure pin (with VPF insert safety pin first).
- Electrical - Identify and deal with initiation mechanism (See VP-13 and MVE-72) or confirm command wire and cut wire.

Disarming
Unscrew and remove detonator or detonator and igniter assembly from mine. Remove detonator from igniter.

MON-100/200 A/P DIRECTIONAL FRAGMENTATION MINES USSR



Description

MON-100 and 200 mines are identical in construction, operation and employment differing only in size and effective range. They consist of a circular dished plate with segmented steel rod fragments in its concave face. The detonator well is located centrally in this face. A complete mine comprises of a securing spike, suspension shackle and the mine body itself.

Technical Specification	MON-100	MON-200
Explosive Content:	2 kg	12 kg
Total weight:	5 kg	25 kg
Diameter:	236 mm	434 mm
Effective range:	100 mtr	200 mtr

Detection: Visual, trip wire feeler

Fuze: Trip: MUV,2,3,and 4, VPF with detonating cord link / Electrical: EDPr electric detonator or NM initiator with MD-5M detonator with command wire, VP-13 or MVE-72

Method of Operation

Electrical command or electrical or mechanical victim operation causes the detonator in the detonator well to function initiating the main charge and projecting shrapnel to a range of 100 mtr covering an arc of 9.5 mtr in the case of MON-100 and 200m covering an arc of 14.5 mtr in the case of MON-200.

Arming

The mine is laid by driving the steel spike into the ground, post, tree or other object The mine is then attached to the spike by the suspension shackle, secured with the wing nuts and aimed at the target area using the sighting device and method shown in the diagram. The initiation mechanism is then set up. Either a command wire with an EDPr electric detonator or NM initiator and MD-5M detonator, a trip wire and detonating cord system, an MVE-72 fuze or VP-13 control unit The mine is then camouflaged, the detonator is screwed into the mine and finally the safety mechanism removed from the initiation system.

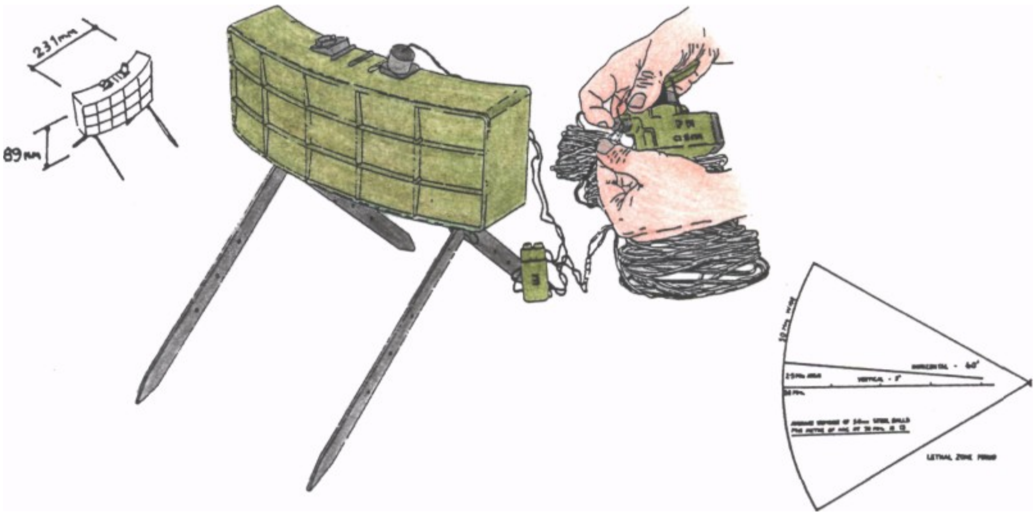
Neutralising

- Trip wire - Trace both ends of the trip wire checking for other trip wires and mines. When trip wire is cleared and confirmed as a simple trip wire cut any detonating cord links, then cut trip wire 150 mm from igniter and tie around igniter to secure pin (With VPF insert safety pin first).
- Electrical - Identify and deal with initiation mechanism (see VP-13 and MVE-72) or confirm command wire and cut

Disarming

Unscrew and remove detonator or detonator and igniter assembly from mine. Remove detonator from igniter.

MRUD A/P DIRECTIONAL FRAGMENTATION MINE YUGO



Description

The MRUD is a simplified copy of the M-18 "Claymore". It is made of injection moulded plastic and comes in a kit consisting of a shoulder bag, mine, 30 mtr of firing cable, detonator and sleeve and a manual inductor for firing. Lethal range is 50 mtr covering an arc of 60 degrees. Ball bearings of 5.5 mm diameter are bedded into the convex front of the mine

Technical Specification

Explosive Content: 0.9 kg plastic explosive
Total weight: 1.5 kg
Detection: Visual, trip wire feeler
Fuze: Electrical - Electric detonator fired by command wire / Trip – UPM-1, RO-1, MUV igniter with detonator and detonating cord link to mine

Method of Operation

Electrical or mechanical command or mechanical victim operation causes the detonator in the detonator well to function initiating the main charge and spreading shrapnel over a 60 degrees arc to its front

Arming

The mine is laid using the scissor legs, pressed into the ground or any improvised system. When the mine is secure it a aimed using the knife edge sight and limit of arc markers on top of the mine and an aiming mark (probably approximately 2.5 mtr high at 50 mtr). The initiation mechanism is set up, either electrical or mechanical command or trip wire with an igniter and a detonating cord link to mine. The detonator is then inserted into the mine. The mine is camouflaged and the final safety mechanism removed from the initiation system.

Neutralising

- Trip wire - Trace both ends of trip wire checking for other trip wires and mines. When trip wire is cleared and confirmed as a simple trip wire, cut trip wire 150 mm from igniter and tie around igniter to secure pin, cut any detonating cord links.
- Electrical - Identify and deal with initiation mechanism or confirm command wire and cut

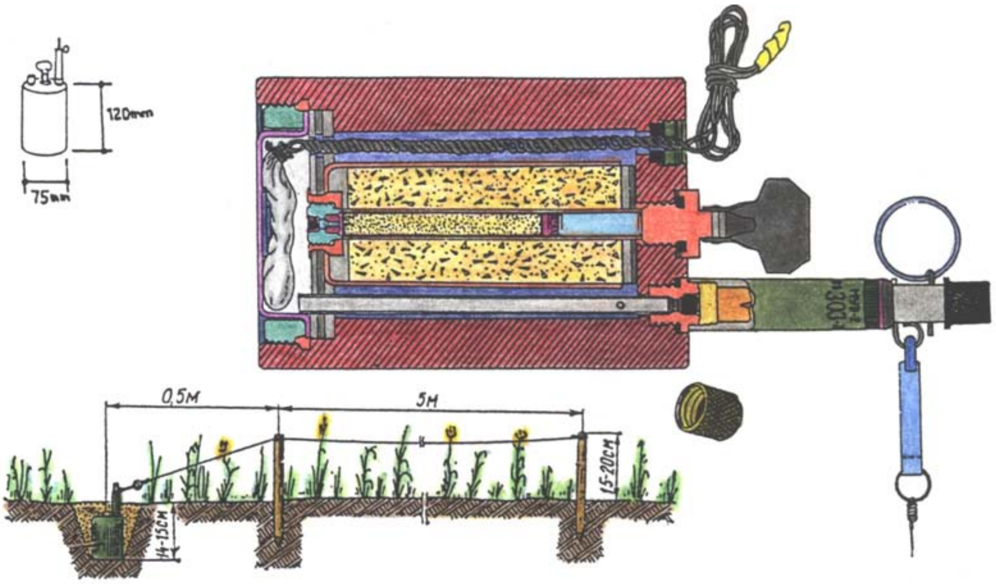
CAUTION

Beware advanced or improvised electrical initiation.

Disarming

Unscrew and remove detonator, detonating cord and/or detonator and igniter assembly. Remove detonator from igniter.

OZM-3 A/P METALLIC BOUNDING FRAGMENTATION MINE USSR



Description

OZM-3 consists of a cast iron body containing a main charge. On the top of the mine in the centre is a detonator retaining plug, to one side of this is a threaded igniter adaptor. On the opposite side two wires protrude to allow for electrical initiation. The OZM-3 can be activated by trip wire, pressure or electrical command.

Technical Specification

Explosive Content: 75 gr TNT
Total weight: 3 kg
Activating pressure: 1 kg pull / 3 kg pressure
Detection: Locator, Trip wire feeler. Visual, Dogs
Fuze: Trip wire - MUV.2, 3 and 4, VPF / Pressure - RO-8 (Czech) Electrical - Command detonation
CAUTION: OZM-3 could be used with VP-13. MVE-72 and NM initiators.

Method of Operation

The external igniter is activated, initiating a percussion cap which fires down a flash tube to ignite the propelling charge. The propelling charge blows the whole mine out of the ground and initiates the delay element which in turn initiates the detonator and main charge when the mine is approximately 1.5 mtr above the ground The fragmentation is lethal to a radius of 9 mtr. When electrically initiated a small electric squib initiates the propelling charge.

Arming

The central plug is removed and a No. 8 detonator inserted, the plug is then replaced. The mine is buried (or surface laid) and the external igniter screwed into position. For ignore MUV, MUV-2, 3, 4 and VPF a trip wire is attached before the safety pin or arming pin is removed. With RO-8 initiator the mine is placed in a deeper hole so that only the prongs protrude above ground For electrical initiation the two wires on the mine are used (or an NM initiator screwed into igniter adaptor).

Neutralizing

- Trip wire - Trace both ends of the trip wire checking for other trip wires and mines. When trip wire is cleared and identified as a simple trip wire, cut trip wire 150 mm from mine and tie around igniter to secure pin (with VPF insert safety pin first).
- Pressure - (RO-8) Replace safety pin or similar into igniter.
- Electrical - Identify and deal with the initiation mechanism (see VP-13 and MVZ-72) or confirm command wires and cut

Disarming

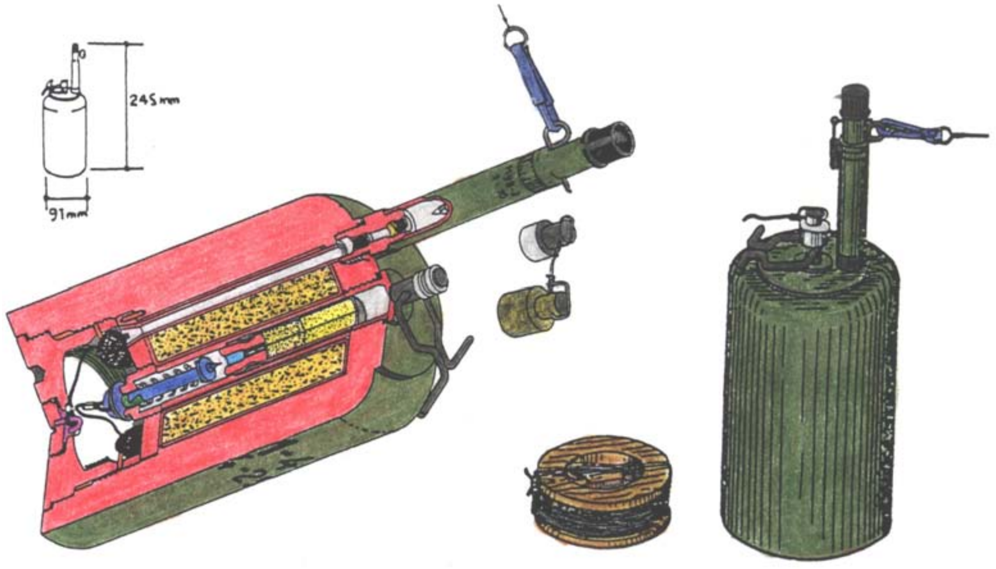
Unscrew and remove igniter. Uncover carefully checking all around for booby traps or pun mine. Unscrew central plug and remove detonator.

CAUTION

MS-3 and anti-lift booby traps.

OZM-4 A/P METALLIC BOUNDING FRAGMENTATION MINE

USSR



Description

OZM-4 consists of a cast iron body containing a main charge. On the top of the mine in the centre is a detonator retaining plug, to one side of this is the threaded igniter adaptor. OZM-4 was originally designed to be only mechanically initiated. However, it can now be electrically initiated since the introduction of the NM electric mechanical initiator.

Technical Specification

Explosive content: 170 gr TNT
Total weight: 5 kg
Activating pressure: 1 kg pull / 3 kg pressure
Detection: Locator, Trip wire feeler, visual
Fuze: Trip wire MUV-2, 3, and 4, VPF / Pressure RO-8 (Czech)

CAUTION

OZM-4 could be used with VP-13, MVE-72, and NM initiators.

Method of Operation

The external igniter is activated, initiating a percussion cap which fires down a flash tube to ignite the propelling charge. The propelling charge blows the mine body off the bottom plate and out of the ground until it reaches the limits of its 60 - 80 cm anchor wire. The anchor wire pulls the striker mechanism in the centre of the mine body which in turn initiates the detonator and the main charge. Detonation spreads shrapnel over a 13 mtr lethal radius.

Arming

The central detonator plug is removed and a detonator inserted, the plug is replaced. The mine is buried and the external igniter screwed into position. For igniters MUV 2 ,3. and 4 and VPF a trip wire is attached before the safety or arming pin is removed. With RO-8 igniters the mine is placed in a deeper hole so that only the prongs protrude above the ground. For electrical initiation an NM initiator can be screwed onto the igniter adaptor, this is connected to the electrical initiation means being employed.

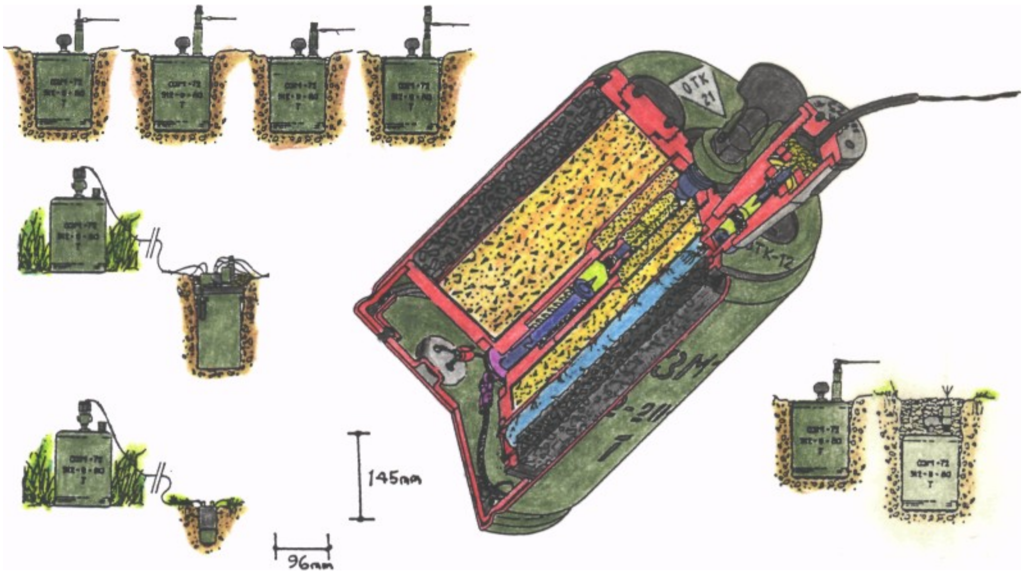
Neutralizing

- Trip wire - Trace both ends of trip wire checking lor other trip wires and mines. When trip wire is cleared and identified as a simple trip wire, cut trip wire 150 mm from mine and tie around igniter to secure pin. (With VPF inset safety pin first)
- Pressure - (RO-8) Replace safety pin or similar into igniter.
- Electrical - Identity and deal with the initiation mechanism (see cut VP-13 and MVE-72) or confirm command wires and unscrew and remove igniter. Uncover carefully checking all around for booby traps or pull mine. Unscrew central plug and remove detonator.

CAUTION

MS-3 anti lift booby traps.

OZM-72 A/T METALLIC BOUNDING FRAGMENTATION MINE USSR



Description

OZM-72 is a steel cylindrical mine olive green, leaf green or brown in colour. Apart from the OZM-160 this is the largest mine in the OZM series, having a larger charge and more fragmentation than either the OZM-3 or OZM-4. The OZM-72 can be initiated by pressure, trip wire or electrical command, VP-13 seismic control unit and the MVE-72 break wire fuze.

Technical Specification

Explosive Content: 0.5 kg
Total weight: 5 kg
Detection: Visual, Trip wire feeler. Locator, Probes
Fuze: Trip wire: MUV-2,3, and 4, VPF / Pressure: RO-6 (cz) / Electrical: VP-13, MVE-72 and NM initiators

Method of Operation

The external igniter is activated, initiating a percussion cap which fires the propelling charge. The mine body is blown out of its outer container into the air until it reaches the limit of the 1 mtr anchor wire. The anchor wire fires the striker mechanism in the centre of the mine body which in turn initiates the detonator and the main charge. Detonation spreads shrapnel over a 25m lethal radius.

Arming

The central detonator plug is removed and a detonator inserted, the plug is replaced. The mine is then buried and the external igniter screwed into position. For igniters MUV, MUV-2. 3, 4 and VPF a trip wire is attached before the safety pin or arming pin is removed. With RO-8 igniter the mine is placed in a deeper hole so that only the prongs protrude above the ground (see illustration). For electrical initiation an NM initiator is screwed, into the mine, and connected to the electrical initiation means being employed.

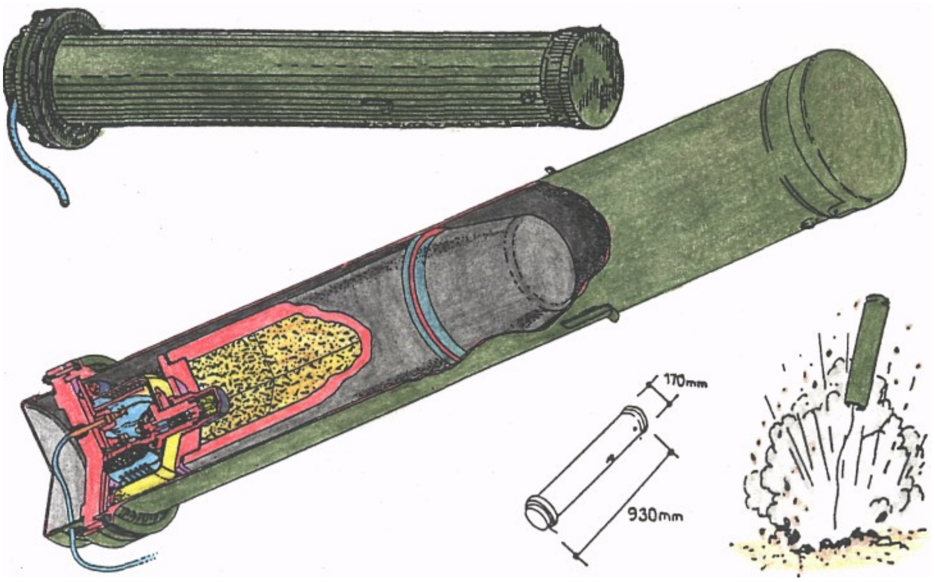
Neutralising

- Trip wire - Trace both ends of trip wire checking for other trip wires and mines. When trip wire is cleared and identified as a simple trip wire, cut trip wire 150 mm from mine and tie around igniter to secure pin (With VPF insert safety pin first).
- Pressure - (RO-8) Replace safety pin or similar into igniter.
- Electrical - Identify and deal with the initiation mechanism (see VP-13 and MVE-72) or confirm command wire and cut

Disarming

Unscrew and remove igniter. Uncover carefully checking all around for booby traps or pull mine. Unscrew central plug and remove detonator.

OZM-160 A/P METALLIC BOUNDING FRAGMENTATION MINE USSR



Description
The OZM-160 is the largest mine in the OZM series. Its overall weight being 85kg and its lethal radius 40m. It is effective against soft skinned vehicles as well as troops in the open. The OZM-160 is designed to be initiated by electrical command but it could be used in conjunction with more advanced electrical initiators such as MVE-72.

Technical Specification
Explosive Content: 4.5 kg TNT
Total weight: 85 kg
Detection: Locator, Visual
Fuze: electrical command detonation. **CAUTION**: Other initiation devices may be employed.

Method of Operation
Initiation is by electrical command which ignites the propelling charge in the base of the mine. The chamber body and projectile are detached from the base and ejected from the ground. At 1.5 mtr height the anchor cable shears the striker shear pin and the striker initiates the detonator which in turn detonates the main charge.

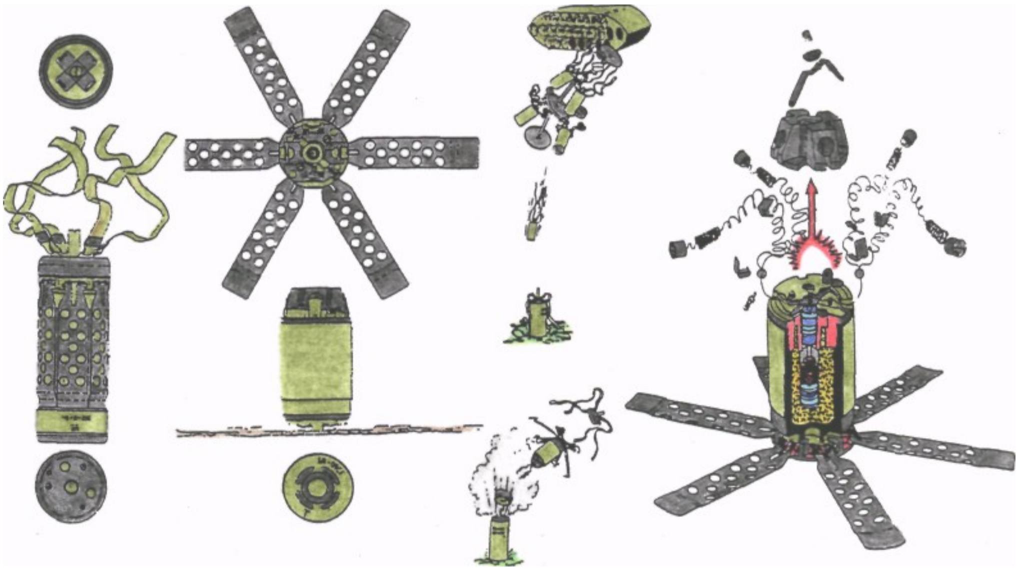
Arming
The mine must first be assembled as it is issued in a dismantled state (the electrical resistance is tested and the detonator inserted into the projectile). The propelling chamber is attached to the projectile and the complete assembly inserted into the tube. The base is attached and the firing cable unrolled from the base. The mine is laid vertically in a 1.25 mtr deep hole, lowered in by the attaching hooks. It is connected to the main firing cable and the electrical detonation circuit tested for continuity before cover. The mine and cable are then back filled and camouflaged.

Neutralizing
Identify and deal with the initiation mechanism or command wire initiation and cut wire.

Disarming
The mine has first to be removed from its hole.

CAUTION
Due to its size improvised booby traps can easily be used. The mine should be pulled using a vehicle or winch from safe distance. When it is clear of the hole and has been checked for booby traps the base is unbolted and the propelling chamber and projectile withdrawn from the tube. The projectile is then unscrewed from the propelling chamber and the detonator removed from the projectile base. The electrical igniter can then be removed from propelling charge.

POM-2S A/P SCATTERABLE TRIPWIRE OPERATED MINE USSR



Description

POM-2S is a scatterable metal A/P mine which can be deployed from BM-22 rockets and helicopter mounted dispensers. Each mine falls to earth in a carrier container from which it is ejected. The ejected mine stands as an upright cylinder erected by six spring loaded fins which lie flat on the ground. Before it is armed the mine has a cruciform alloy top which is blown off as part of the arming sequence to deploy the "Y" shaped 9.5 mtr trip wires. POM-2S has a self destruct mechanism, 23 hours is known - other times are probably available.

Technical Specification

Explosive Content: Unknown
Total weight: Unknown
Activating pull: 0.5 - 1 kg
Detection: Visual, Trip wire. Feelers, Locator
Fuze: Integral, trip wire operated ball retained cocked striker

Method of Operation & Arming

All deployment and arming sequences for POM-2S are by a series of pyrotechnic chains.

- The mines in their streamer stabilised carrier containers are deployed from the dispensers by a pyrotechnic charge which also initiates the whole pyrotechnic arming sequence.
- After landing on the ground the mine is expelled from the carrier container by a propellant charge and its erected by the six spring loaded fins.
- After a few seconds delay another pyrotechnic charge blows the cruciform alloy top off the mine, releasing the 4 spring loaded trip wire spools to deploy the trip wires and at the same time arming the main igniter.
- After arming, a light pull on any of the trip wires will cause the pivoting arm in the top of the mine to rotate, releasing the cocked striker to initiate the detonator and main charge, scattering fragmentation over a 10 - 15 mtr lethal radius.

Delay to self destruct is by spring tension on an adhesive compound which after a set delay period causes the main igniter to function.

Neutralising

This mine cannot be neutralised

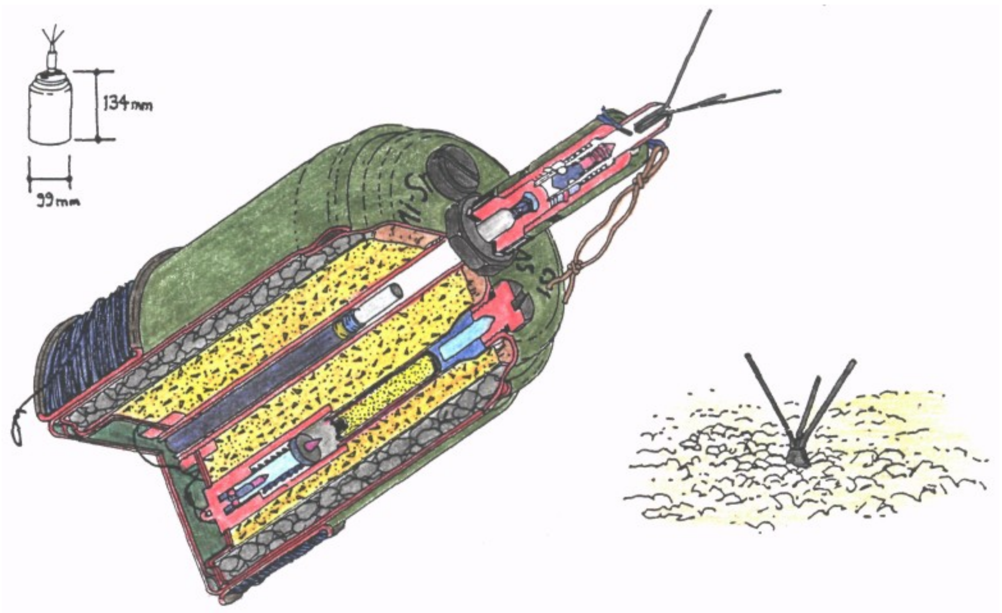
Disarming

Disarming cannot be safely achieved POM-2S should be destroyed by remote attack i.e. rifle fire from cover. If a manual approach is essential to place explosive charge, do not touch the trip wires.

CAUTION

The self destruct mechanism often fails on these mines leaving a proportion of armed and dangerous mines. Tell-tale signs of POM-2S presence are empty carrier containers, streamers and cruciform alloy mine tops.

PP-Mi-Sr A/P METALLIC BOUNDING FRAGMENTATION MINE CZECH



Description

PP-Mi-Sr and PP-Mi-Sr II are generally the same mine, there are only minor differences. On the top of the mine in the centre is the igniter adaptor/propelling charge well On either side of this are screw heads, the larger is the main charge filler orifice, the smaller is the detonator well. As the thread on the igniter adaptor is the same as a Soviet igniter the mine could be employed with any Soviet initiation mechanism.

Technical Specification

Explosive Content: 325 gr TNT
Total weight: 3.25 kg
Activating pressure: 1 kg (pull) 3 kg (pressure)
Detection: Visual, trip wire feeler, locator, dogs
Fuze: Trip wire: RO-1 / Pressure: RO-8. **CAUTION:** PP-Mi-Sr could be used Soviet initiation mechanisms including VP-13, MVE-72 and NM initiators.

Method of Operation

The external igniter is activated, initiating a percussion cap which ignites the propelling charge. The propelling charge blows the mine body out of its container into the air until it reaches the limit of the 1.5 mtr anchor wire. The anchor wire fires the cocked striker mechanism in the base of the mine which in turn initiates the detonator and main charge. Detonation of the mine approximately 1.5 mtr above the ground spreads shrapnel over a 25 mtr lethal radius.

Arming

The detonator plug is unscrewed and a detonator inserted, the plug is replaced to secure the detonator. The mine is then placed in a prepared hole and partially covered leaving the top exposed The propelling charge is then inserted in the central well and the external igniter and percussion cap screwed into position. The mine is then property camouflaged Finally, if RO-1 igniter is being used a trip wire is attached to an anchor and then to the mine. With RO-8 igniters the mine is placed in a deeper hole so that only the prongs protrude above the ground. (See illustration). The final action is to remove the safety pin.

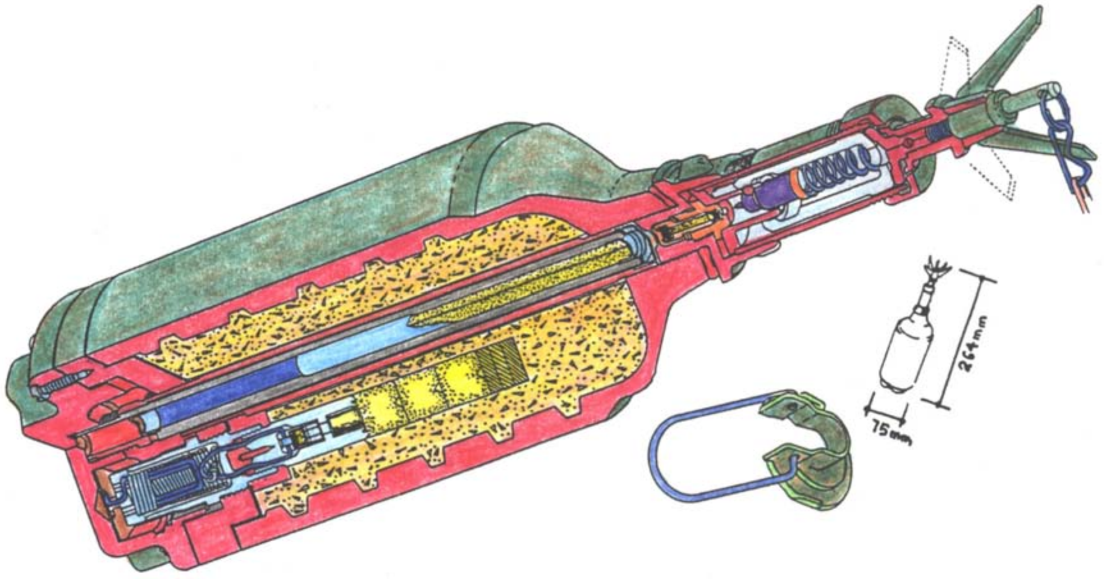
Neutralising

- Trip wire (RO-1) - Trace both ends of the trip wire checking for other trip wires and mines. When trip wire is cleared and identified as a simple trip wire, cut wire 150 mm from mine and tie around igniter to secure pin.
- Pressure (RO-8) - Replace safety pin or similar into igniter.

Disarming

Unscrew and remove igniter. Uncover, carefully checking for booby traps or put mine. Remove propelling charge, unscrew detonator plug and remove detonator.

PROM-1 A/P BOUNDING FRAGMENTATION MINE YUGO



Description
PROM-1 consists of a steel bottle shaped body containing the main charge. On the top of the mine in the centre is a threaded orifice to take the fuze. The fuze is both trip wire and pressure activated.

Technical Specifications
Explosive Content: 425 gr TNT
Total weight: 3 kg
Activating pressure: (pull) 3 kg (pressure) 9 kg
Detection: Visual, trip wire feeler, locator, dogs
Fuze: UPROM-1 Trip and pressure activated ball retained cocked striker

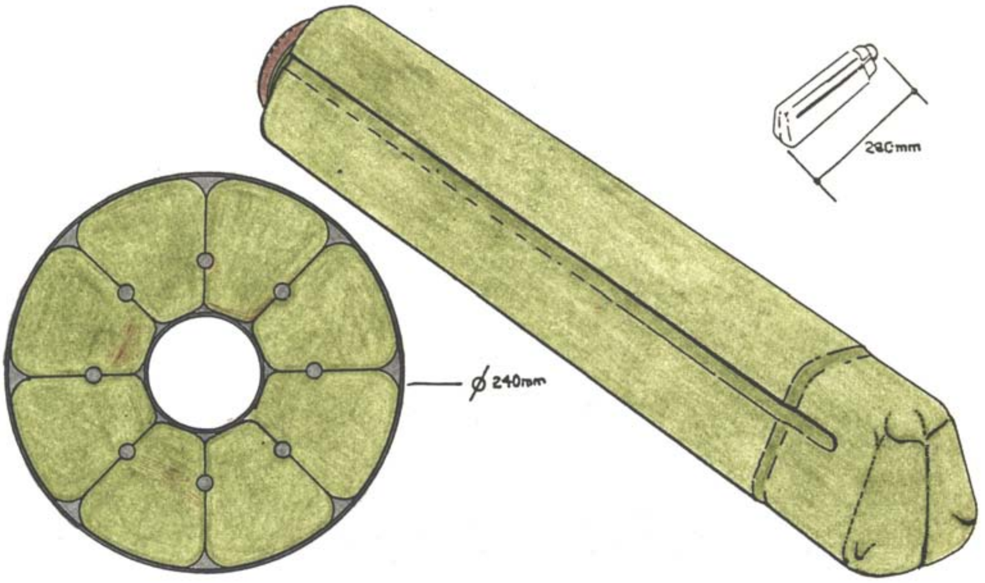
Method of Operation
The required pressure or pull pushes an internal cylinder in the fuze down until the retaining balls fall out allowing the striker to move forward under spring pressure to hit the percussion cap. The percussion cap ignites a 1.5 sec. delay element which then fires the propelling charge ejecting the mine from the ground. At 70 - 80 cm above the ground the mine reaches the end of its anchor wire which pulls a percussion cap onto a fixed firing pin initiating the detonator which fires the main charge, causing fragmentation which is effective up to 25 mtr.

Arming
Remove transit plug from mine and screw in fuze. Bury mine with fuze protruding above ground surface. Attach trip wire to anchor and then to split ring on fuze. Camouflage fuze and trip wire, raise height of trip wire with stakes if necessary. Move safety clip from the lowered (safety) position to the horizontal (armed) position.

Neutralizing
Move safety dip to the lowered (safe) position. Trace both ends of trip wire checking for other trip wires and mines. When trip wire is cleared and confirmed as a simple trip wire, cut trip wire close to mine.

Disarming
Uncover carefully checking for booby traps or pull mine. Unscrew and remove fuze.

PGMDM A/V SCATTERABLE PLASTIC BLAST MINE USSR



Description
PGMDM is a small bar type mine, triangular in section and spongy to the touch due to the thin plastic casing and liquid explosive fill. The mine tapers slightly and at the widest end is a round protrusion, probably the clockwork self destruct timer which can be preset to one of 12 settings up to a maximum of 24 hours. The fuze is thought to be the VGM employed in the PFM-1, operating by hydraulic pressure. PGMDM may be scattered from helicopters or delivered by aircraft with amiable containers, as well as BM22 rockets and probably other systems also. Much of the information on this mine is as yet unverified. (It appears to be designed for use against wheeled vehicles).

Technical Specification
Explosive content: Unknown
Total weight: 1.4 – 2 kg estimate
Activating pressure: Unknown
Detection: Visual
Fuze: VGM Hydraulically operated ball retained cocked striker with delayed arming.

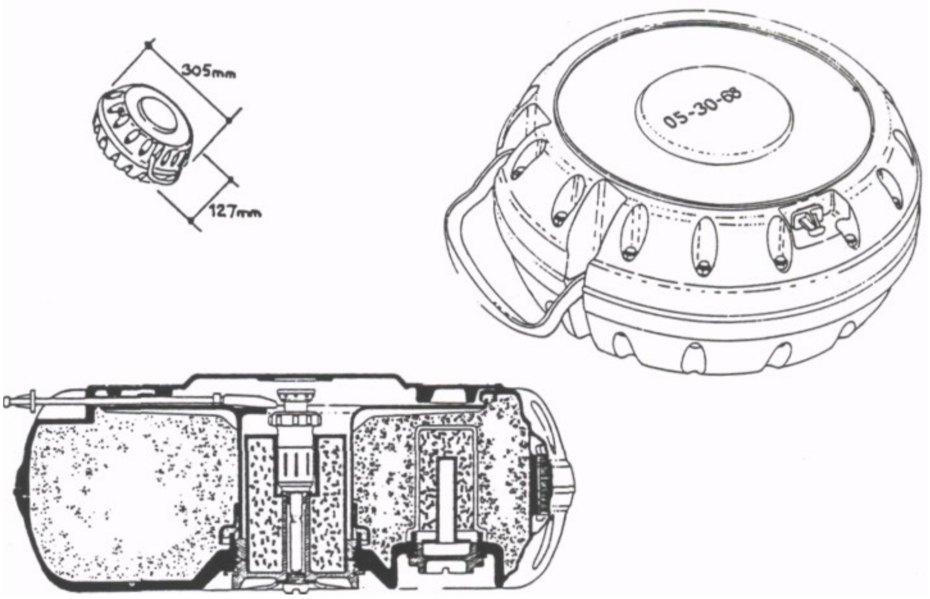
Method of Operation
When ejected from the delivery system the mine is activated electronically. There is a 30 second delay to arming to allow it to reach the ground before arming. After the delay all operations are mechanical pressure applied to the body is transmitted via the liquid explosive to move a detent slide. The slide moves until the strike retaining ball falls away and the spring loaded striker initiates the detonator which in turn initiates the main charge. The self destruct has a clockwork mechanism with a maximum setting of 24 hours.

Arming
Initialed electrically at ejection (precise method unknown). Delay to arming by spring loaded damper moving through viscous liquid in dash pot

Neutralizing
Unknown - Probably not possible with this mine.

Disarming
Dealing with PGMDM will almost certainty be an area search problem which will rely on carefully planned and controlled visual searches, backed up by other techniques and equipment such as small arms fire lor remote clearance, and burning in long grass. When mines are found they can be destroyed in situ by detonation or burning using prepared incendiaries or charges. For clearance one of the main hazards is the self destruct mechanism making any handling dangerous and centralisation of mines for destruction unacceptable.

PM-60 A/T PLASTIC PRESSURE OPERATED BLAST MINE GDR



Description
PM-60 a a round plastic mine with a slightly raised pressure plate on top. Around the circumference are a series of recesses housing the plastic screws which fasten the two halves of the mine together. On the underside are two booster wells with closing caps, a central main well and secondary one for an anti lift device. There is a handle for the arming fork on top of the mine and a folding carrying handle at the side.

Technical specification
Explosive content: 9.9 kg TNT
Total weight: 11.4 kg
Activating pressure: 150 - 200 kg
Detection: Visual, Probes, Dog, Locators (not with chemical fuze)
Fuze: Mechanical pressure or chemical pressure fuze

Method of Operation
When the required pressure is applied to the top of the mine the weakened circumference of the pressure plate shears, transferring the load onto the fuze head. The fuze head is depressed causing the fuze to function.

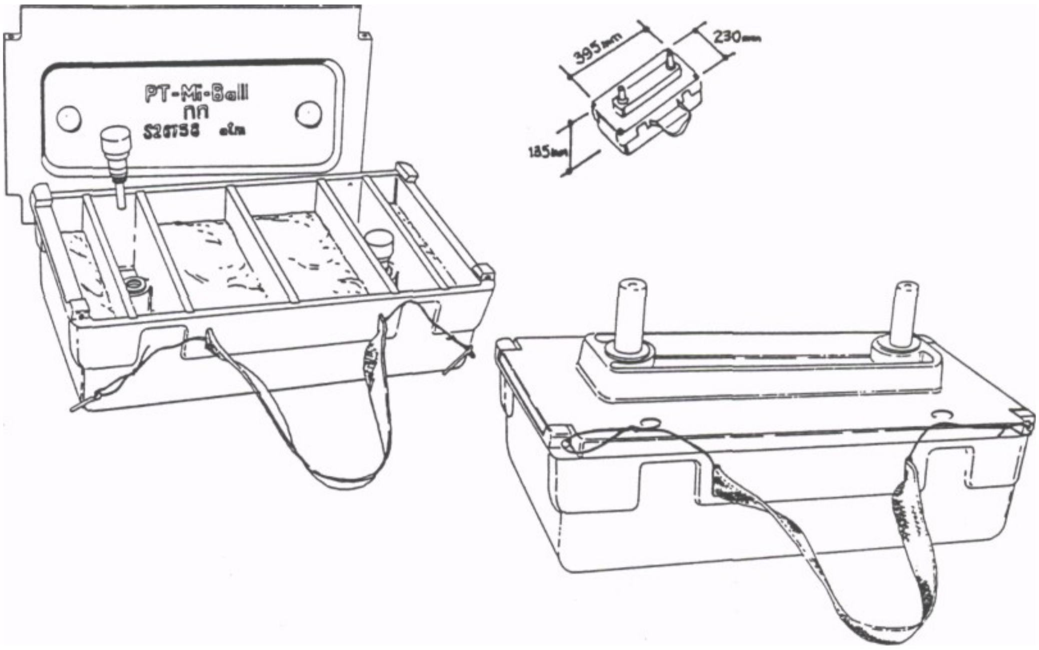
Arming
Unscrew central booster assembly in underside of mine and screw fuze into booster. Remove transit safety fork from fuze body and ensure that mine arming fork is pulled out Screw fuze and booster assembly into mine. Push in arming fork. Remove detonator plug, insert detonator and replace plug. Excavate cavity for mine to alow for 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. Pull arming fork out, cover and camouflage mine.

Neutralising
Push in arming fork

Disarming
Uncover, checking all around and beneath for booby traps or pull mine. Unscrew and remove fuze and booster assembly. Unscrew fuze from booster and remove detonator from booster.

CAUTION
Provision for booby trapping. Thought to be pressure release device.

PT-Mi-Ba-II A/T PLASTIC PRESSURE OPERATED BLAST MINE CZECH



Description
PT-Mi-Ba-II consists of a rectangular plastic box with a webbing carrying strap. On the top of the mine is a raised area which houses two protruding pressure plungers, these transfer load onto the heads of the fuzes.

Technical Specification
Explosive Content: 6 kg TNT
Total weight: 9.6 kg
Activating pressure: 200 - 450 kg
Detection: Probe, Visual, Dogs, Locator (unreliable)
Fuze: 2 x RO-7-II Cocked striker, shear ring control

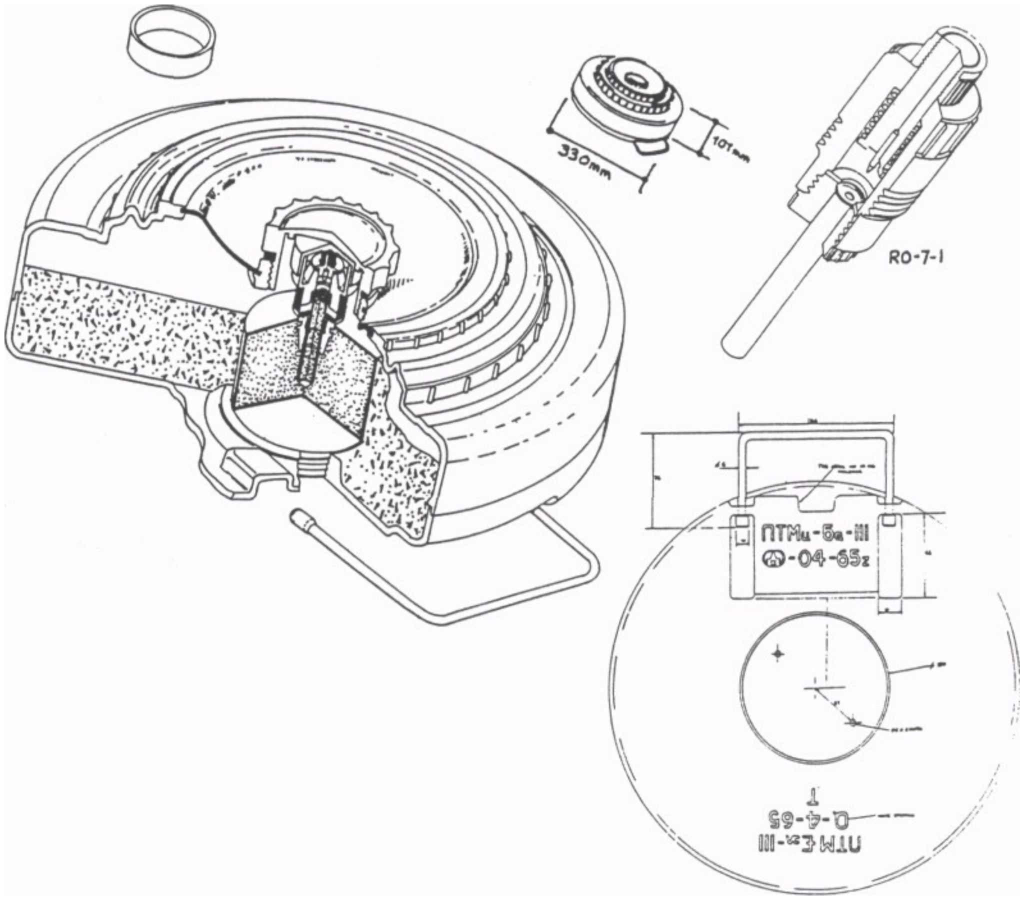
Method of Operation
When the required pressure is applied to the head of either of the pressure plungers they are moved downwards through their retaining collars. This downward movement allows the bottom of the pressure plunger to transfer the bad onto the head of the RO-7-II fuze. This causes the firing pin shear ring to shear leaving the striker free to be driven downward by the firing pin spring. The firing pin initiates a percussion cap which fires the detonator, the explosive chain is carried through the booster to the main charge.

Arming
The lid of the mine is removed after withdrawing the two lock pins and the two fuze wells are exposed. Detonators are fitted to the two fuzes and the fuze assemblies fitted into the fuze wells in the booster charges. The pressure plungers are fitted into their retaining collars, the lid of the mine is refitted and the lock pins inserted. A cavity is excavated to allow for 2 - 4 cm of spoil coverage over the heads of the pressure plungers when buried. The mine is positioned in the hole, covered and camouflaged.

Neutralising
Carefully uncover the top of the mine, withdraw the two lock pins and remove the lid of the mine. Remove pressure plungers and replace lid

Disarming
Uncover the mine checking all around and beneath for booby traps or pull mine. Pull out the two lock pins and remove the lid of the mine (pull lid if suspicious). Extract fuze and booster assembly. Separate fuze assembly from booster and unscrew detonator from fuze.

PT-Mi-Ba-III A/T BAKELITE PRESSURE OPERATED BLAST MINE CZECH



Description
PT-Mi-Ba-III consists of a round brown bakelite body with a stepped pressure plate and rubber sealing ring. There a a central knurled fuze well cap. On the underside is a plastic lifting handle. Detection of this mine with metal detector locators is very difficult and should not be relied upon.

Technical Specifications
Explosive content: 7.2 kg TNT
Total weight: 9.9 kg
Activating pressure: 200 - 300 kg
Detection: Visual, Probes, Dogs
Fuze: RO-7-1 or RO-7-2 cocked striker, shear ring control

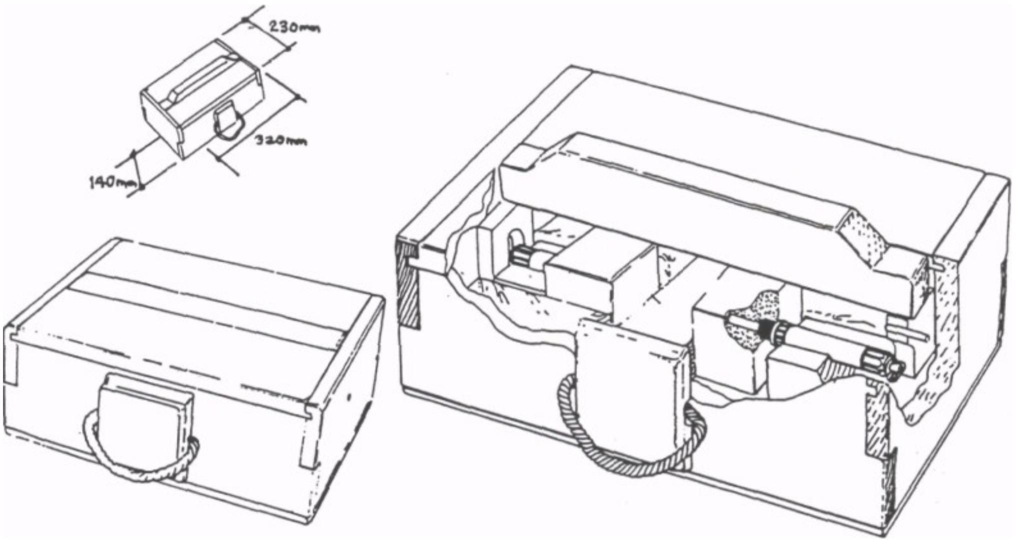
Method of Operation
When the required pressure is applied to the top of the mine the pressure plate collapses at the rubber flexible joint transferring the pressure to the top of the fuze, in the case of RO-7-1 the perspex case at the top of the fuze breaks, releasing the striker under spring pressure. With RO-7-2 pressure causes the striker shear ring to shear and the striker is driven downwards under spring pressure. In both cases the detonator is initiated and the explosive chain continues through the booster to the main charge.

Arming
Excavate cavity for the mine to allow for 2-6 cm spoil coverage when buried. Place mine in hole and remove fuze wel cap. Unscrew base of fuze, insert detonator and replace fuze base. Screw fuze and detonator assembly into booster charge in fuze well Remove safety ring from fuze well, replace fuze cap, cover and camouflage mine.

Neutralising
Remove fuze well cap, insert safety ring (if available) around fuze and replace cap.

Disarming
Uncover mine checking all around and beneath for booby traps or pull mine. Remove fuze well cap, unscrew fuze assembly, remove detonator from fuze.

PT-Mi-D A/T WOODEN PRESSURE OPERATED BLAST MINE CZECH



Description

PT-Mi-D is a wooden box type A/T mine with a rope carrying handle. It employs 2 x RO-1 igniters for initiation. The pressure plate is a wooden bar with a raised ramp section, in transit this is inverted so that the ramp fits inside the mine presenting a flat outer surface. Well suited to insurgent warfare, many variations occur, and frequently booby trapped.

Technical Specification

Explosive Content: 6.2 kg TNT
Total weight: 9 kg
Activating pressure: 200 - 450 kg
Detection: Locator (unreliable) Probes, Visual, Dogs
Fuze: 2 x RO-1 igniters with wooden pressure blocks

Method of Operation

The RO-1 igniters are fixed so that their winged striker retaining pins face downwards beneath the wooden pressure blocks. These pressure blocks are secured to the end walls of the mine by wooden dowels (designed to shear). The ramped wooden pressure plate is inserted so that the ramp stands proud of the mine and the ends are supported on the pressure blocks. When the required pressure is applied to the ramped pressure plate the dowels shear allowing the pressure block to be pushed downward. This in turn pushes the striker retaining pin out of the RO-1 causing the striker to fire the percussion cap which initiates the detonator, this in turn detonates the TNT booster charge and the main charge.

Arming

Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Remove pressure plate and 2 x 200 gr TNT blocks. Screw detonators onto RO-1 igniters and fit igniter assemblies into TNT blocks. Fit TNT blocks and igniter assemblies back into mine, locate on wooden support blocks and ensure the retaining pins are facing downwards under the pressure blocks. Place mine in hole, position pressure plate with ramp uppermost. Cover and camouflage mine.

Neutralizing

This can be achieved by simply removing the ramped wooden pressure plate.

CAUTION

This should be done by pulling from a safe distance due to the risk of booby traps.

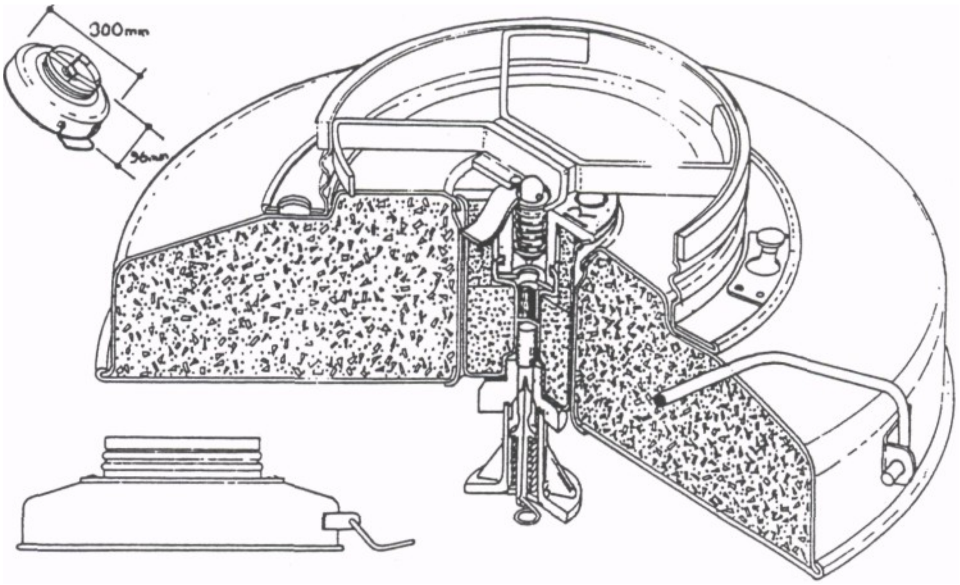
Disarming

Uncover mine checking all around and underneath for booby traps or pull mine. After removing ramped wooden pressure plate remove TNT blocks with RO-1 igniters and secure retaining pins in igniter with adhesive tape or wire. Remove igniter assemblies from TNT blocks and separate detonators from igniters.

CAUTION

Well suited to improvised booby traps due to space inside and the ease of attaching fittings.

PT-Mi-K A/T METALLIC PRESSURE OPERATED BLAST MINE CZECH



Description

PT-Mi-K comprises a round steel body with a pressure "spider" on top. The pressure spider is corrugated around its circumference and has a transit cover. The fuze well continues right through the mine being open on the bottom to accommodate the anti-lift fuze. PT-Mi-K is resistant to most explosive clearance methods.

Technical Specifications

Explosive Content: 5 kg TNT
Total weight: 7.8 kg
Activating pressure: 330 kg
Detection: Locator, Probes, Visual, Dogs
Fuze: RO-5 pressure operated, cocked striker, shear pin control (or RO-9) RO-5 has 2 x detonators and booster integral and is threaded (or RO-3 on its base. RO-3 release of pressure, ball retained, cocked striker

Method of Operation

The required pressure applied to the top of the mine causes the pressure spider to distort and collapse transferring the pressure to the fuze head. Pressure on the fuze head causes the shear pin to shear, releasing the spring loaded striker to fire the detonator, the explosive chain is carried on through the booster, which is integral in the RO-5 fuze, to the main charge. When RO-3 anti lift is employed, release of pressure on the fuze allows the striker retaining balls to fall away releasing the striker to initiate the bottom detonator in the RO-5 fuze.

Arming

For use with RO-3 anti lift excavate cavity as shown in illustration. Remove transit plug from base of RO-5 and screw RO-3 onto base. Remove pressure spider from mine and insert both fuzes into the mine so that RO-3 protrudes from the base. Replace pressure spider and attach 1 mtr arming lanyard to RO-3 safety pin. Place mine in hole ensuring that its full weight bears on the RO-3 fuze and lay arming lanyard in channel. Withdraw safety pin from RO-5 pressure fuze. Cover and camouflage mine leaving arming lanyard exposed. Withdraw RO-3 safety pin with a steady pull on the lanyard. Fill and camouflage channel

Neutralizing

RO-5 insert safety pin or similar. RO-3 Can not be safely neutralised as it is difficult and dangerous to replace the safety pin.

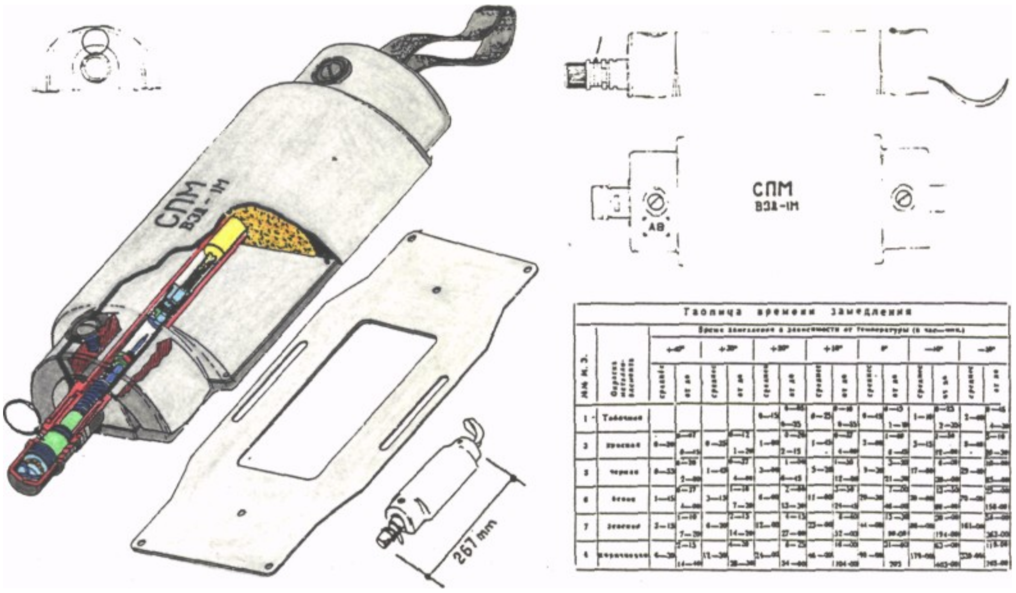
Disarming

CAUTION: Always pull PT-Mi-K.

After pulling, if it is confirmed that no RO-3 is fitted then remove pressure spider and remove RO-5 fuze.

CAUTION: Do not remove spider if there is a possibility of RO-3, as removing spider can cause RO-3 to function.

SPM MAGNETIC LIMPET TIME DELAY MINE USSR



Description

The mine consists ol a plastic or bakelite half cylindrical body, usually grey in colour. On the flat face there are 4 magnets (2 at either end) a flat metal sheet covers the rest of this surface and in transit there is a keeper plate covering the bottom face. At one end of the mine is the time delay fuze and at the other a webbing carrying strap. The mine is designed for use against ships and fuel storage tanks etc. but is used by terrorist organisations as a car bomb. Often the carrying strap is cut off before deployment to make remote removal more difficult. A sliding pull of 9 kg is necessary to remove the mine from a steel target

Technical Specification

Explosive Content: 0.95 kg TNT
Total weight: 4.5 kg
Time delay: 5 min to 832 hrs
Detection: Visual, Dogs, Locators
Fuze: VZD-1M Cocked striker with lead strip time delay

Method of Operation

When the safety pin is withdrawn the pressure of the firing pin spring causes a steel wire to start cutting through a lead delay strip (identical in principle to MUV-2 igniter). After the set delay (different lead strips are used for different delays) the wire cuts through the lead strip releasing the striker which fires a percussion cap and initiates the detonator which in turn initiates the booster and main charge.

Arming

Select and fit lead strip for time delay required (choice of 8 delay strips - 5 rnins to 832 hrs) replace fuze cap. Fit detonator assembly to base of fuze. Remove transit cap from mine and screw in fuze and booster assembly. Remove keeper from magnets and attach mine to target Withdraw safety pin and evacuate area. Time delay starts from pin withdrawal but is not precise and will vary with temperature.

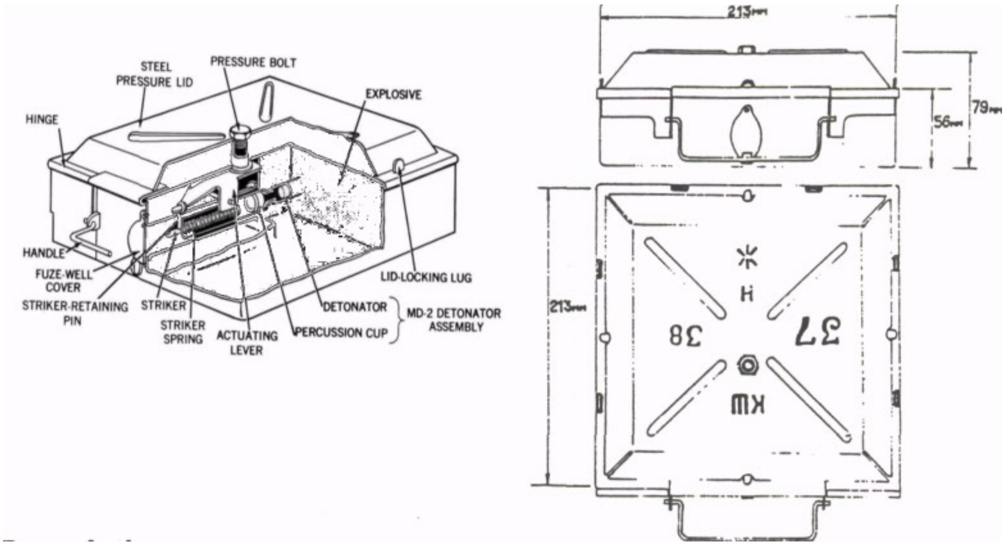
Neutralizing

Neutralization is not possible as the striker and safety pin orifice creep forward as the delay strip is cut.

Disarming

This is dangerous due to ignorance of the chosen time delay. Any rough handling can cause the delay strip to shear and the fuze to function. The mine should be pulled away from the target with a cord attached to the carrying strap, or a wire slip loop around the fuze body if the strap has been removed. Unscrew and remove fuze from mine body and booster using the fuze body nut Unscrew detonator from fuze body.
CAUTION: Manual extraction of the fuze is quite possible but not recommended due to the unknown time delay and possible fragile condition of the delay strip.

TM-38 A/T METALLIC BLAST MINE USSR



Description
TM-38 is a square metal mine with a raised pressure plate that has 4 diagonal reinforcing ribs. It has a hinged carrying handle with a pivoting fuze well cover beneath it. The mine is usually grey or olive drab coloured and although a WWII mine it may still be encountered. Improvised booby trapping is common and 1 is recorded that one version of this mine was equipped with a plunger type anti Eft mechanism on the bottom of the mine, and a striker mechanism held back by a projection on the pivoting fuze wet cover. Rotating the fuze well cover to get at the fuze released the striker against a supplementary detonator.

Technical Specification
Explosive Content: 3 kg TNT
Total weight: 5 kg
Activating pressure: 250 kg
Detection: Locators, Visual, Probes, Dogs
Fuze: MUV pin retained cocked striker

Method of Operation
The required pressure applied to the top of the mine Distorts and collapses the pressure plate forcing the pressure bolt down onto the fuze actuating lever which has been kept stationary by a safety pin type spring. The depressed fuze activating lever pulls the striker retaining pin out of the MUV igniter firing the percussion cap, detonator and main charge.

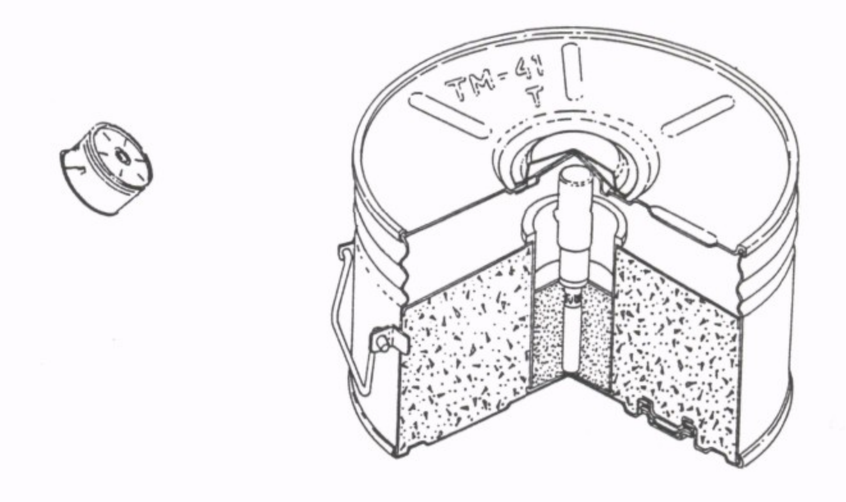
Arming
Excavate cavity for mine to allow for 2 - 4 cm of spoil coverage when buried. Screw MD-2 detonator onto the MUV igniter. Insert igniter into fuze well through the opening under the carrying handle (it does not screw in). Keep the loop of the striker retaining pin upwards so that it engages in the narrow end of the fuze actuating cover, close the pivoted fuze well cover. Place mine in cavity, cover and camouflage mine.

Neutralizing
This mine cannot be neutralized.

Disarming
Uncover mine checking all around and beneath for booby traps or pull mine. Open pivoted fuze well cover and withdraw MUV igniter, separate MD-2 detonator from igniter.

CAUTION
Unless it can be confirmed that It is not the model with the built In booby traps always pull or blow in situ.

TM-41 & TM-44 A/T METALLIC BLAST MINES USSR



Description

TM-41 and 44 mines are identical in principle and operation. The only difference being that TM-44 a larger than TM-41. These mines are very simple in operation, they are circular and quite high, looking very like a cake tin. Around the circumference at the top of the mine are a series of corrugations to allow for distortion when compressed. The top of the mines have radial strengthening ribs and a central metal cap. On the side of the mine is a carrying handle and on the base a filler plug. Copied by the Chinese.

Technical Specification

	TM-41	TM-44
Explosive content:	3.8 kg	7.2 kg
Total weight:	5.4 kg	5.5 kg
Activating pressure:	200 kg	200 kg

Detection: Locators, Probes, Visual, Dogs
Fuze: MV-5 pressure operated ball retained cocked striker

Method of Operation

The required pressure applied to the top of the mine distorts and collapses the top of the mine around the corrugated circumference, transferring the load onto the fuze. Compression of the fuze allows the striker retaining ball to fall away (see MV-5) releasing the striker to fire the detonator which in turn initiates the booster and main charge.

Arming

Excavate cavity for mine to allow 2 - 6 cm of spoil coverage when buried. Position the mine and partially cover. Fit MD-2 detonator to MV-5 fuze. Remove central metal cap and insert detonator and MV-5 into the booster. Replace cap, cover and camouflage mine.

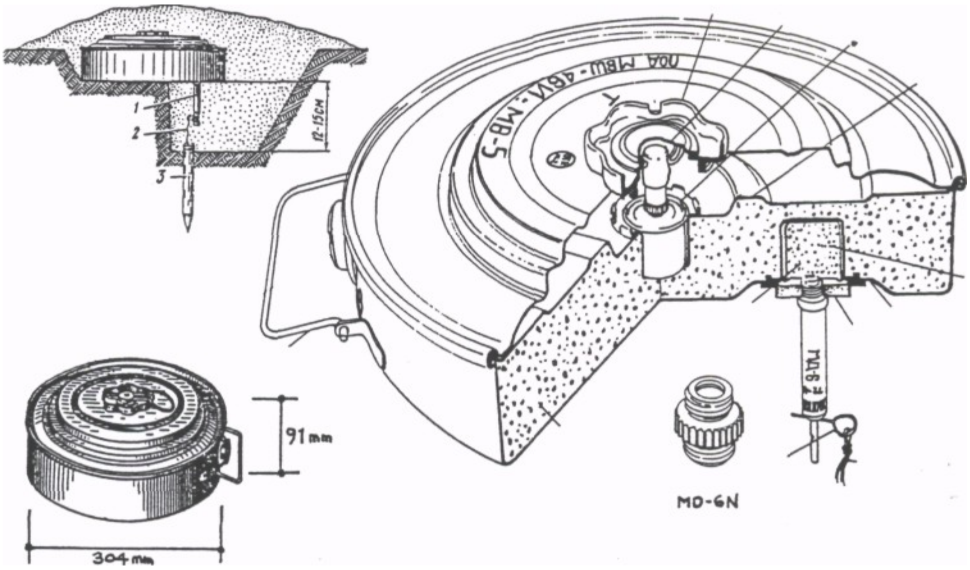
Neutralizing

These mines cannot be neutralized.

Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Remove metal cap and remove MV-5 and detonator. Separate detonator from MV-5.

TM-46 & TMN-46 A/T METALLIC BLAST MINES USSR



Description

TM-46 is a round metal mine, khaki in colour with a pressure plate on top which rises in a series of concentric stepped rings. It has a raised rolled edge around the upper surface circumference, a carrying handle on the side with a filler plug under the handle. TMN-46 is identical to TM-46 except that it has a secondary fuze well in the base threaded to take an MUV type pull operated anti lift device. Copied by Chinese and Egyptians.

Technical Specification

Explosive Content: 5.3 kg TNT
Total weight: 8.81kg
Activating pressure: 120 - 400 kg / MVSh-46: 21 kg pull or 3 mm tilt
Detection: Locators, Probes, Visual, Dogs
Fuze: MV-5 + scalloped cap. Pressure operated ball retained cocked striker or MVM Pressure operated ball retained cocked striker with safety pin or MVSh-46 Tilt rod operated ball retained cocked striker (see MVSh-46 fuze)

Method of Operation

The required pressure applied to the top of the mine distorts and collapses the stepped pressure plate transferring the load onto the fuze. Compression of the fuze allows the striker retaining ball to fall away (see MV-5 and MVM) releasing the striker which fires the detonator which in turn initiates the booster and main charge.

Arming

Excavate cavity for mine to allow 2 - 6 cm of spoil coverage when buried. Position mine, partially cover and remove transit plug.

- MV-5 Fit MD-6 detonator to MV-5 and insert in booster. Screw on scalloped cap - mine now armed. Cover and camouflage mine
- MVM Fit MD-6 detonator to MVM. Screw MVM into mine. Remove safety pin, cover and camouflage mine.
- MUV anti lift with TMN-46 • (see illustration). In this application MUV has to employ double threaded MD-6N detonator

Neutralizing

Only mines fitted with MVM can be neutralized by inserting safety pin or similar through the MVM fuze head.

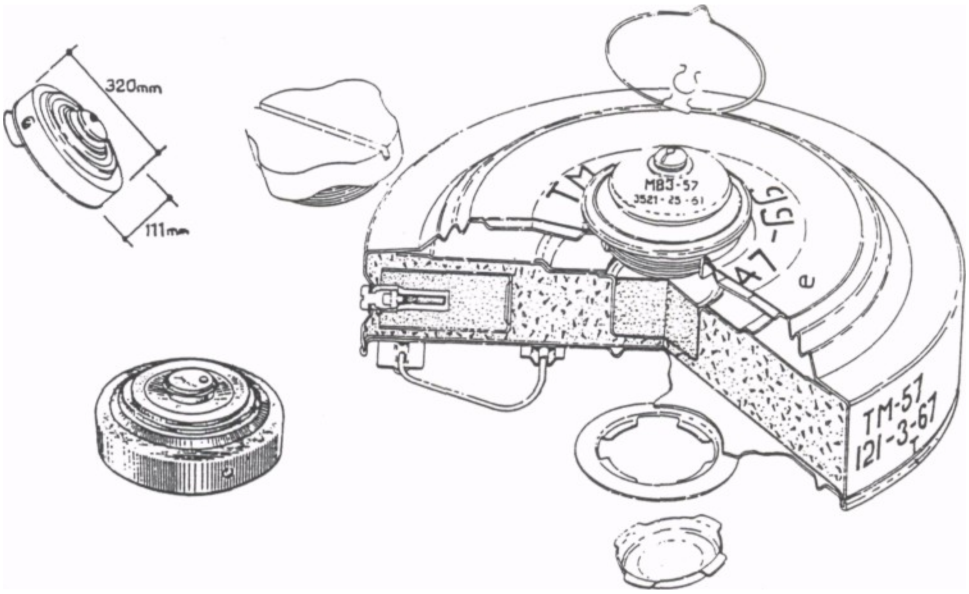
Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Unscrew fuze or scalloped cap and remove fuze. Unscrew MD-6 detonator from fuze.

CAUTION

Provision for booby trapping, MUV type pull device.

TM-57 A/T METALLIC BLAST MINE USSR



Description

TM-57 is a round metal mine, khaki in colour with a pressure plate on top which rises as a series of concentric stepped rings. It has a second fuze well on the circumference which accommodates an MUV type pull operated anti-lift device. There is a carrying handle which folds flat onto the base. TM-57 can be hand or mechanically laid.

Technical Specification

Explosive content: 7 kg TNT
Total weight: 9.5 kg
Activating pressure: 200 - 300 kg / MVSh-57: 21 kg pull or 3 mm tilt
Detection: Locator, Visual, Probes, Dogs
Fuze: MVZ-57 - Pressure operated ball retained cocked striker, clockwork delay to arming
MVSh-57 - Tilt rod operated ball retained cocked striker

Method of Operation

The required pressure applied to the top of the mine distorts and collapses the stepped pressure plate transferring the load onto the fuze. Compression of the fuze allows the striker retaining ball to fall away (see MV-5 and MVZ-57) releasing the sinker which fires the detonator which in turn initiates the booster and main charge.

Arming (MVZ-57 only)

Excavate cavity for mine to allow 2 - 6 cm of spoil coverage when buried. Position mine, partially cover and remove transit plug. Remove transit cap from fuze, check that fuze is unarmed (igniter in horizontal position) and wound up. Screw fuze into mine and cover, leaving only fuze head exposed. Remove safety clip, depress arming button and listen for mechanism working, finally camouflage mine. Delay to arming 25 - 30 seconds.

Neutralizing

This mine cannot be neutralized.

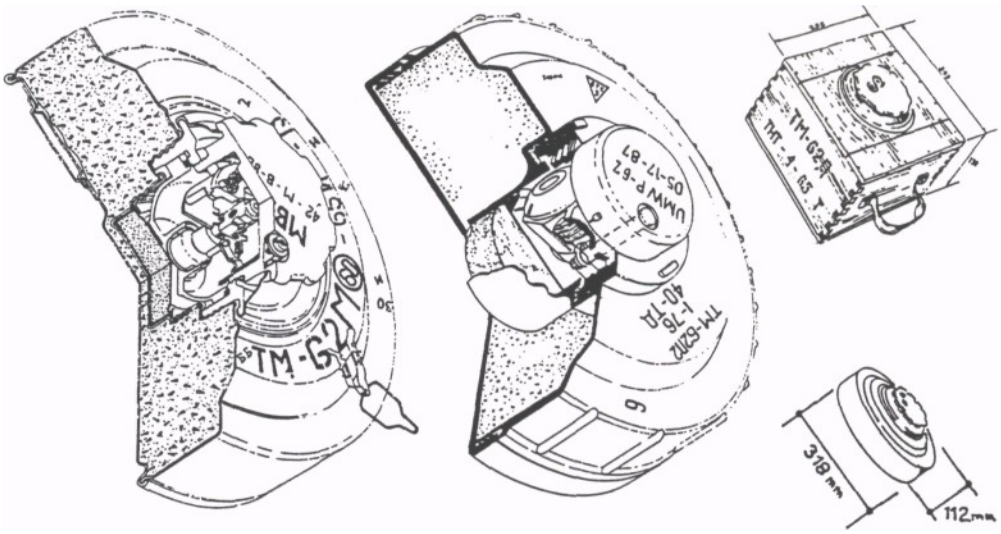
Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Unscrew and remove fuze.

CAUTION

Provision for booby trapping. MUV or VPF type pull device and MD-5M detonator in side well

TM-62M & P A/T METAL & PLASTIC BLAST MINES USSR



Description

TM-62M a a round khaki metallic mine with provision for a webbing carrying handle on the base. TM-62P a round plastic mine made from brown bakelite and has vertical ribs around its circumference. Both have a raised top section which a not a pressure plate, and can accommodate the same fuzes, though the metal fuze MVZ-62 is for use with TM-62M, the plastic fuze MWP-62 is for use with TM-62P. The collapsing pressure plate being integral in the fuzes. There are no secondary fuze web for booby trapping, possibly relying on MS-3 or improvised methods. This mine a designed to be mechanically or hand laid. There is also a TM-62D (wooden) and TM-62B (cardboard) mine which accommodate the same fuzes, however they are less common and are not covered here.

Technical Specification

Explosive content: 7 kg TNT
Total weight: 9.65 kg
Activating pressure: 175 - 250 kg
Detection: Locator (unreliable forTM-62P), Probe, Visual, Dogs
Fuze: MVZ-62 - pressure operated ball retained cocked striker, clockwork delay to arming (TM-62M) or MWP-62 - Pressure operated ball retained cocked striker, bellows delay to arming (TM-62P)

Method of Operation

The required pressure applied to the top of either fuze distorts and collapses the housing transferring the load onto the fuze. Compression of the fuze allows the striker retaining ball to fall away releasing the striker which fires AC the detonator which in turn initiates the booster and main charge.

Arming (MVZ-62 only)

Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine in hole and partially cover, remove transit plug, check booster is in fuze well. Remove transit cap from fuze, check that fuze is unarmed (igniter in horizontal position) and screw fuze into mine. Insert key into fuze head and turn 1 revolution clockwise to wind up mechanism. Cover mine leaving arming button exposed. Remove safely clip and depress arming button, listen for sound of mechanism working, finally camouflage mine. Delay to arming 60-70 seconds.

Neutralizing (MVZ-62 only)

Insert key and turn 1 revolution (as for arming). This turns detonator through 90 degrees into the horizontal position.

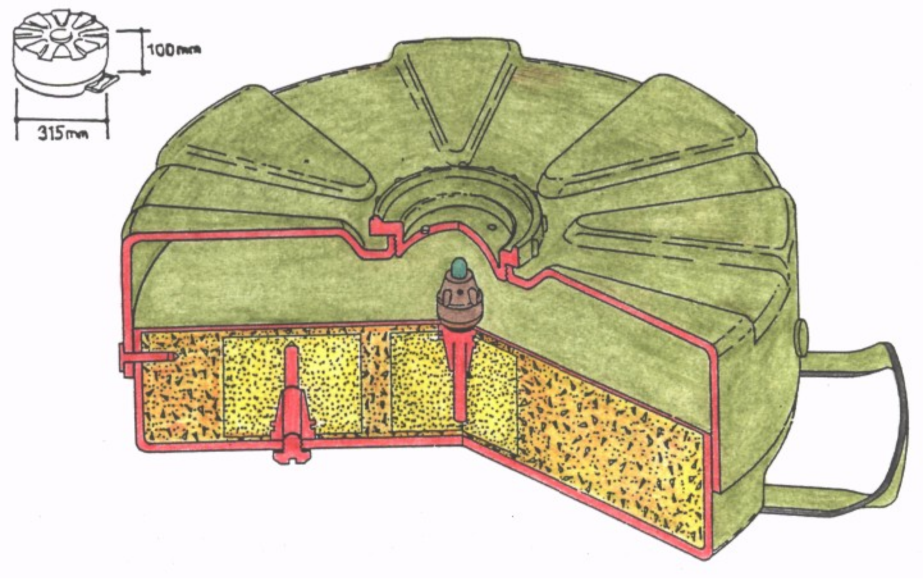
Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Unscrew and remove fuze (both MVZ-62 and MWP-62)

CAUTION

MS-3 or improvised booby traps / See also MVN-72 Magnetic Influence fuze.

TMA-1 A/T PLASTIC PRESSURE OPERATED BLAST MINE YUGO



Description
TMA-1 a a circular mine comprising a body and corrugated polystyrene pressure plate which has a knurled fuze cap. The pressure plate is fixed to the body by 4 plastic screws around the circumference. There is a second fuze well in the bottom of the mine for an anti lift device. TMA-1 can not be detected with metal detector locators.

Technical Specifications
Explosive Content: 5.4 kg TNT
Total weight: 6.5 kg
Activating pressure: 100 kg
Detection: Visual, Probes, Dogs
Fuze: UANU-1 pressure operated chemical friction igniter.

Method of Operation
The required pressure applied to the top of the mine causes the polystyrene pressure plate to distort and collapse transferring the pressure to the fuze head. The fuze striker is forced through a membrane into a friction sensitive compound which ignites, firing the detonator which initiates the booster and the main charge.

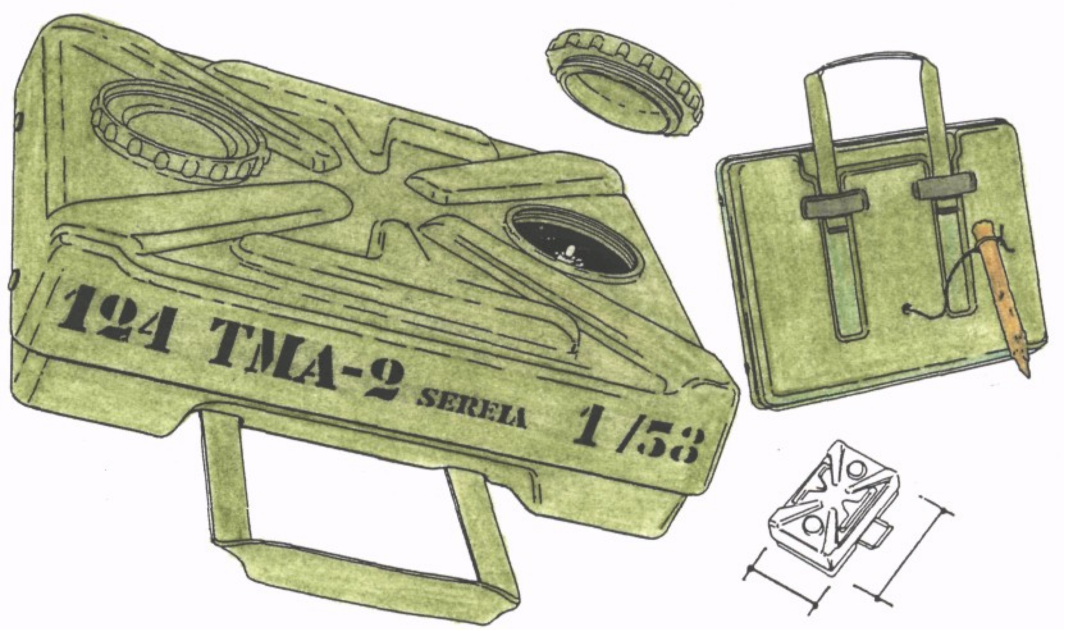
Arming
Excavate cavity for mine to alow for 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. Unscrew fuze cap and transit plug from booster. Screw fuze into booster and remove fuze safety pin. Replace fuze cap, cover and camouflage mine.

Neutralising
Remove fuze cap. Insert safety pin or similar into fuze.

Disarming
Uncover checking all around and beneath for booby traps or pull mine. Unscrew fuze cap, insert safety pin or similar into fuze, remove fuze assembly and fit protective cover over detonator.

CAUTION
This mine is designed to be booby trapped with either a pressure release switch or a pull switch attached to an anchor.

TMA-2 A/T PLASTIC PRESSURE OPERATED BLAST MINE YUGO



Description
TMA-2 is a rectangular plastic mine comprising a body and a ribbed polystyrene pressure plate which has 2 knurled fuze caps each covering a fuze well. The pressure plate is fixed to the body by 4 plastic screws, 2 on each of the short sides. There is a small hole in the base of the mine for attachment of the pull cord of a pull actuated anti-lift switch. TMA-2 cannot be detected with metal detector locators.

Technical Specifications
Explosive Content: 6.5 kg TNT
Activating pressure: 120 - 320 kg
Detection: Probes, Visual, Dogs
Fuze: 2 x UANU- 1 pressure operated chemical friction igniters.

Arming
Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. Unscrew both fuze caps and transit plugs from boosters. Fit the fuzes into the booster charges and remove safety pins from the fuzes. Replace fuze caps. Cover and camouflage mine.

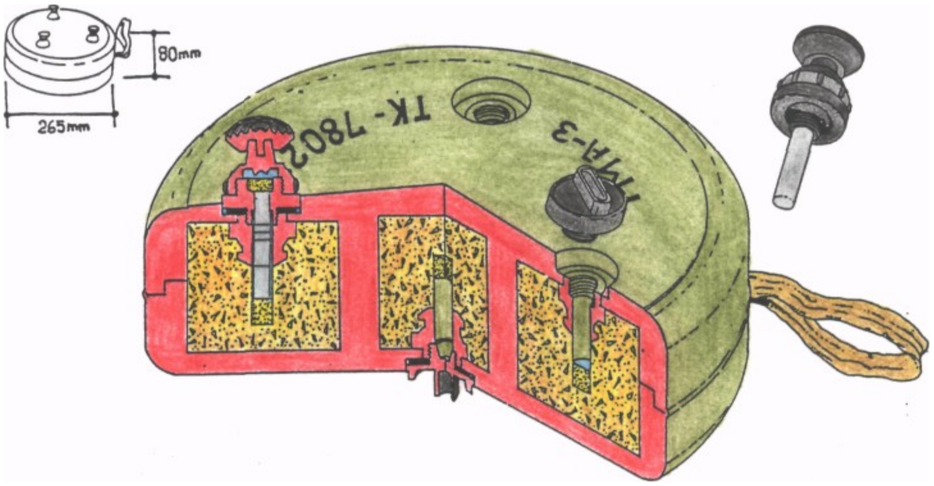
Neutralising
Remove fuze caps and insert safety pins or similar into fuzes.

Method of Operation
The required pressure applied to the top of the mine causes the polystyrene pressure plate to distort and collapse transferring the pressure to one or both of the fuze heads. The fuze striker is forced through a membrane into a friction sensitive compound which ignites, firing the detonator which initiates the booster and main charge.

Disarming
Uncover checking all around and beneath for booby traps or pull mine. Unscrew fuze caps, insert safety pin or similar into fuzes, remove fuze assemblies and fit protective covers over detonators.

CAUTION
Provision for booby trapping with a pull switch.

TMA-3 A/T PLASTIC PRESSURE OPERATED BLAST MINE YUGO



Description

TMA-3 comprises a round green or brown lacquered hessian body with 3 fuze wells in the top and one fuze well in the bottom to take an anti lift device. The pressure fuzes are of bakelite and there is no pressure plate. TMA-3 is resistant to most explosive clearance methods and cannot be detected with metal detector locators. Fuzes are transported in a wooden protective box.

Technical Specification

Explosive Content: 6.5 kg TNT or Trotyl
Total weight: 6.6kg
Activating pressure: 180 - 350 kg
Detection: visual. Probes, Dogs
Fuze: 3 x UTMAH-1 pressure operated chemical friction igniters

Method of Operation

The required pressure applied to all or any of the bakelite fuzes causes the fuze head to collapse crushing the friction sensitive compound which ignites and sets off the detonator which initiates the booster and main charge.

Arming

Excavate cavity for mine to alow 2 - 6 cm spoil coverage when buried. Position mine and partially cover. Unscrew transit caps from fuze web, remove rubber seals and fit seals to fuzes. Screw fuzes into the mine. Cover and camouflage mine.

Neutralizing

This mine cannot be neutralized.

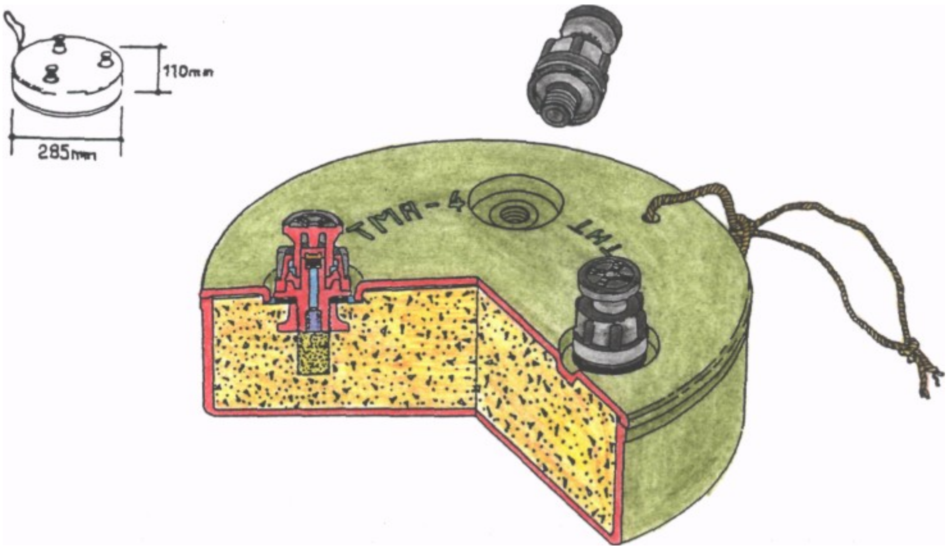
Disarming

Uncover checking all around and beneath for booby traps or pull mine. Unscrew fuzes from mine, holding fuze by the knurled base, not the head. When fuzes are removed store separately.

CAUTION

Provision for booby trapping. UTMAH-1 fuzes can be very sensitive particularly after having been subjected to shock or damage in any way.

TMA-4 A/T PLASTIC PRESSURE OPERATED BLAST MINE YUGO



Description

TMA-4 is a development of TMA-3. It comprises a round fight green plastic body with 3 fuze wells in the top only. The pressure fuzes are of bakelite and there is no pressure plate. TMA-4 is resistant to most explosive clearance methods and cannot be detected with metal detector locators. Close to the rim is a hole which passes right through the mine, this is for a carrying handle but could serve as an attachment point for an anti-lift device.

Technical Specifications

Explosive Content: 5.5 kg TNT
Total weight: 6 kg
Activating pressure: 200 kg
Detection: Visual, Probes, Dogs
Fuze: 3 x UTMAH-4 pressure operated chemical friction igniters

Method of Operation

The required pressure applied to any or all of the bakelite fuzes, causes the fuze head to collapse crushing the friction sensitive compound which ignites and sets off the detonator which initiates the booster and main charge.

Arming

Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. Unscrew transit caps from fuze wells and screw fuzes into the mine. Cover and camouflage the mine.

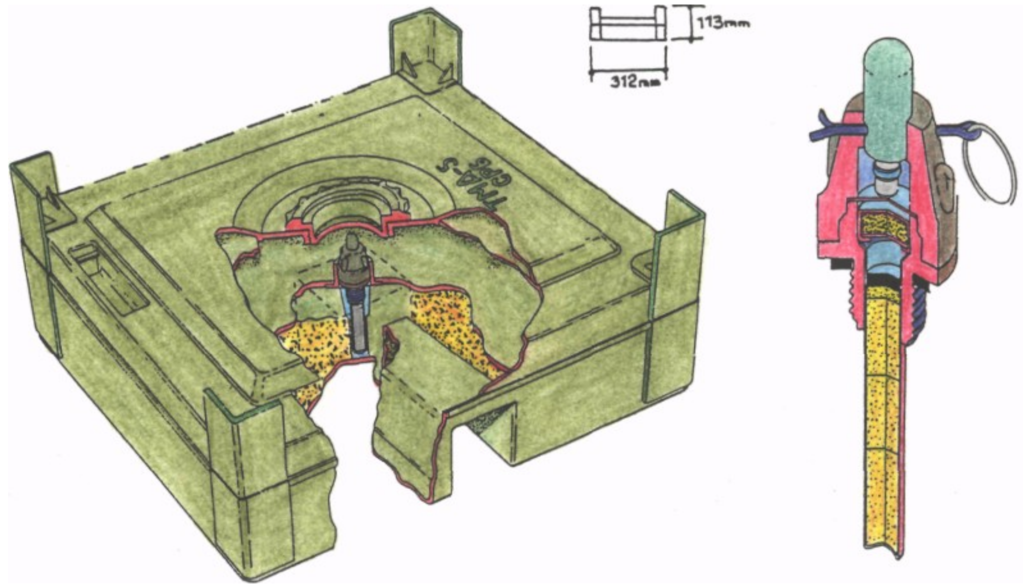
Neutralizing

This mine cannot be neutralized.

Disarming

Uncover checking all around and beneath lor booby traps or pull mine. Unscrew fuzes from mine, holding fuze by the knurled base, not the head. When fuzes are removed store separately.

TMA-5 A/T PLASTIC PRESSURE OPERATED BLAST MINE YUGO



Description
TMA-5 a a square plastic mine comprising a body and a raised polystyrene pressure plate which has a knurled fuze cap in the centre covering a fuze well. The pressure plate sits in a lip on top of the body and is secured by 2 catches. The comers of the pressure plate have elongated reinforcement to allow for stacking mines both in storage and deployment There is a covered recess at one side of the pressure plate which is the transit housing for the fuze. The base has four holes for the attachment of pull cords for anti-lift devices. TMA-5 can not be detected with metal detector locators.

Technical Specifications
Explosive Content: 5.5 kg TNT
Total weight: 6.6 kg
Activating pressure: 100 - 300 kg
Detection: Visual, Probes, Dogs
Fuze: UANU-1 Pressure operated chemical friction igniter

Method of Operation
The required pressure applied to the top of the mine causes the polystyrene pressure plate to distort and collapse transferring the pressure to the fuze head. The fuze striker is forced through a membrane into a friction sensitive compound which ignites, firing the detonator which initiates the booster and main charge.

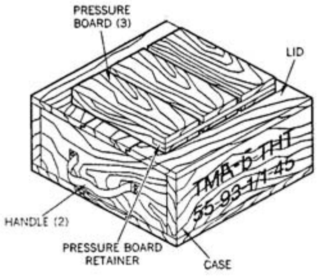
Arming
Place the pressure plate on the body and secure with 2 clips. Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. Remove the fuze from the transit housing and unscrew fuze well cap and transit plug from booster. Fit fuze into booster, remove safety pin and replace fuze cap. Cover and camouflage mine.

Neutralizing
Remove fuze cap and insert safety pin or similar into fuze.

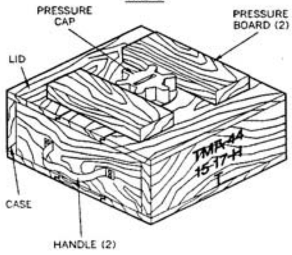
Disarming
Uncover checking all around and beneath for booby traps or pull mine. Unscrew fuze cap, insert safety pin or similar into fuze, remove fuze assembly and fit protective cover to detonator.

CAUTION
Provision for booby trapping with pull switch. Has been used in stacked pairs.

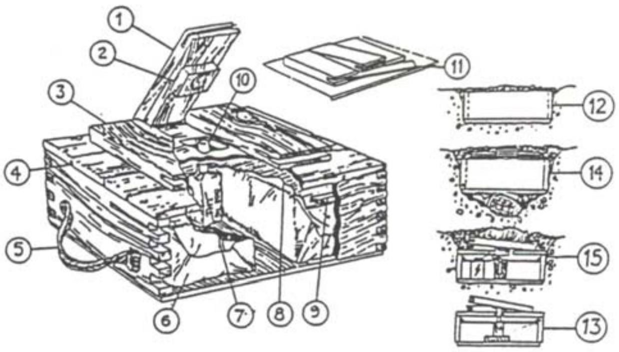
TMD-B & TMD-44 A/T WOODEN BLAST MINES USSR



TMD-B



TMD-44



1. Hinged Block
2. Pressure block
3. Fixed block
4. Sawcut to weaken lid
5. Carrying handle
6. Paper or Tar-paper wrapped cast TNT blocks
7. Paper wrapped cast TNT booster
8. Main charge cover board
9. Explosive depth strip
10. MV-5 Pressure Fuze
11. Use of locking strip
12. Conversion to AP mine by removing top
13. Conversion to AP mine by block under booster
14. Booby trapped method with grenade (insurgent S.A.)
15. Booby trapped method with pressure switch (insurgent Rh)

Description

TMD-B dates from 1943, but is still in use throughout the world. The mine casing is of wood, square with 3 blocks across the top and a strip in their grooved ends. On the side is a carrying handle. The mine can be easily manufactured by local labour where needed and quality varies from skilled joinery to crude nail and glue construction. These mines are well suited to to improvised booby traps due to the space inside them and the ease of attaching fittings to them. This mine is well suited to insurgent warfare, and many variations occur. TMD-44 is identical to TMD-B except it has a Bakelite cap covering the fuze instead of a hinged wooden board.

Technical Specifications

Explosive content: 5.5 - 7 kg Amanite, Picric acid etc.
Total weight: 7.5 - 9 kg
Activating pressure as A/T: 200 kg or as A/P conversion: 5.5 kg
Detection: Locators (MV-5 detectable). Probe, Visual, Dogs
Fuze: MV-5 Pressure operated ball retained cocked striker. (Other types of fuze could be employed with some improvisation).

Method of Operation

The required pressure applied to the top of the mine causes the wooden top to shear along the pre-cut grooves, allowing the central board to collapse transmitting the pressure via the pressure block onto the fuze head. Compression of the fuze allows the striker retaining ball to fall away, (see MV-5) releasing the striker which fires the detonator which in turn initiates the booster and main charge.

Arming

Excavate cavity for mine to allow 2 - 4 cm of spoil coverage when buried. Position mine and partially cover. Fit MD-2 detonator to MV-5. Lift central board, fit fuze assembly into booster. Close hinged board and secure with locking slat. Cover and camouflage mine. See illustration for conversion to A/P.

Neutralization

This mine cannot be neutralized.

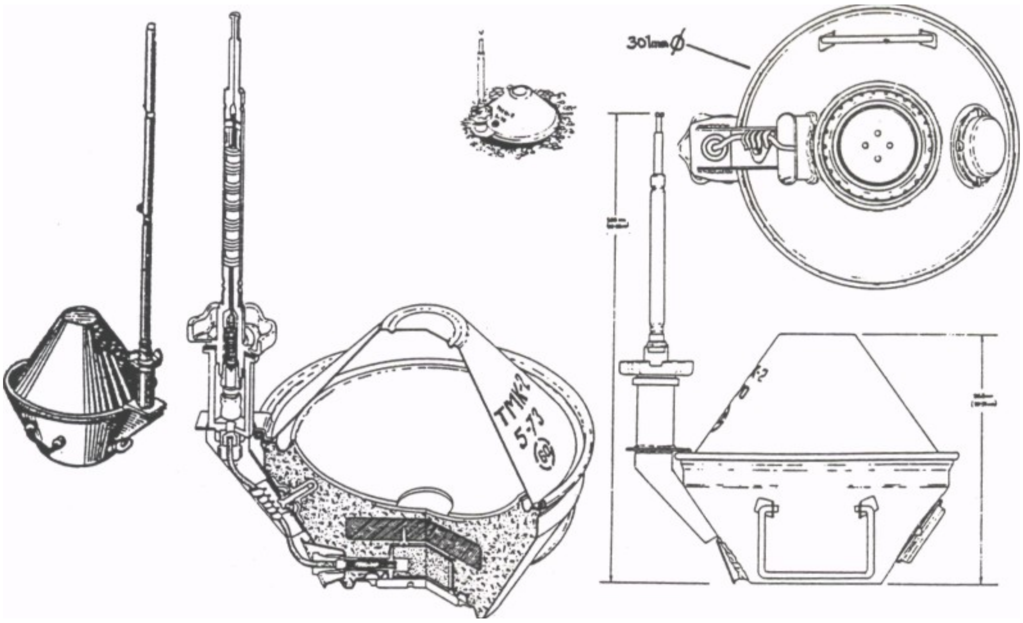
Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Remove locking slat and open hinged board.

CAUTION

Lift board using drawing pin and line or similar. Remove fuze assembly and separate detonator from MV-5. These mines have been extensively booby trapped. Enough space in mine for batteries and switches etc:

TMK-2 A/T METALLIC SHAPED CHARGE MINE USSR



Description
TMK-2 mine body is a double truncated cone seamed around its circumference. The upper half is the stand off cone and the lower half contains the shaped charge. Attached to the side is a mounting to take a tit rod fuze. On the lower half of the body is a carrying handle, a filler plug, a bottom plate for access to the booster charge and a large detonator well.

Technical Specification
Explosive content: 6 kg TNT
Total weight: 12.5 kg
Activating pressure: 8 - 12 kg force / 24' - 36' tilt
Detection: Locator, Visual, Probes, Dogs
Penetration: 110mm
Fuze: MVK-2 Tilt rod operated ball retained cocked striker (same operating principle as MVSh-46)

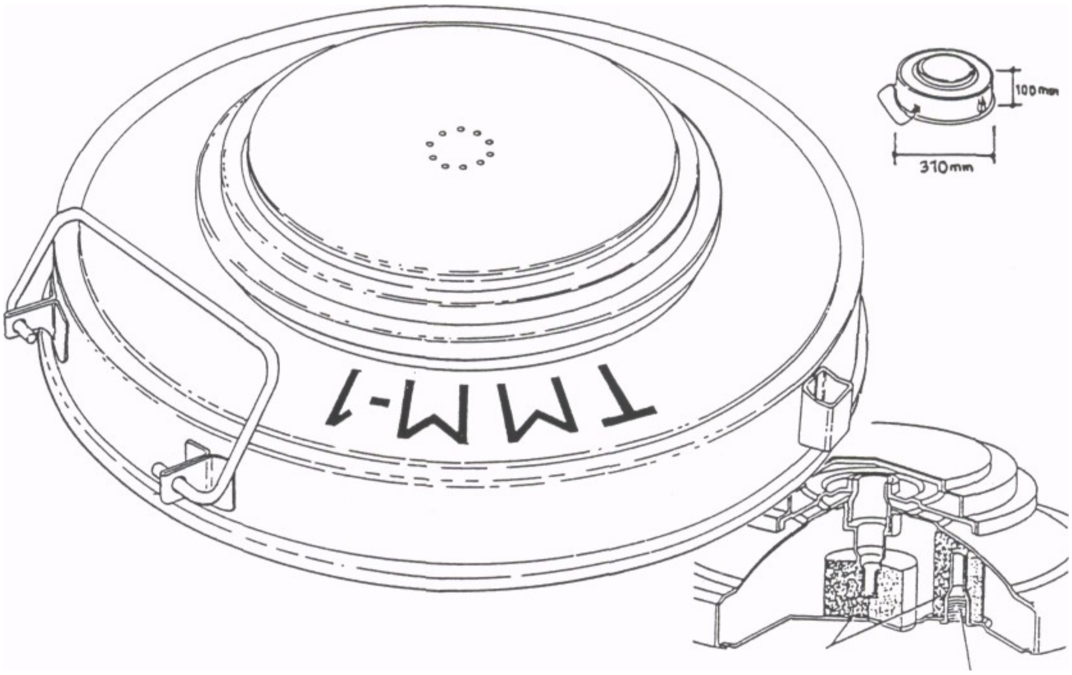
Method of Operation
The required lateral force applied to the top of the tut rod causes the tilt rod to bend. The bending of the tilt rod causes the retaining rod to be drawn upward lifting the ball retaining cup to free the retaining bate. This releases the striker which initiates the MD-7M detonator and the primary detonator. The detonation wave is carried down a detonating cord link to initiate the secondary detonator. This in turn initiates the booster and main charge. The shaped charge with the added effect of a wave shaper fires upwards into the underside of the vehicle which activated the tilt rod.

Arming
Cut detonating cord to length and connect to primary and secondary detonators and adaptor. Remove transit plugs from both detonator wells, screw in secondary detonator and secure detonating cord link to primary well by bending connector clip over. Excavate cavity for mine to allow spoil to just cover stand off cone when buried. Position mine and partially cover. Attach MD-7M detonator to fuze, remove transit cap and screw in fuze. Cover and camouflage mine.

Neutralizing
Cut detonating cord link to secondary detonator or unscrew secondary detonator.

Disarming
Uncover mine checking all around and beneath for booby traps or pull mine. Unscrew and remove fuze, remove MD-7M detonator from fuze. Remove primary detonator from fuze well and secondary detonator from booster.
CAUTION: Neutralize if possible before puling due to danger of bending tilt rod. Do not hold tilt rod when removing fuze.

TMM-1 A/T METALLIC PRESSURE OPERATED BLAST MINE YUGO



Description

TMM-1 is a copy of the German WW2 Teller mine 43. It comprises a round steel body with a stepped pressure plate which screws onto the fuze well There are two threaded wells for booby trap devices, one in the side and one in the base. TMM-1 is fitted with a carrying handle and can be hand or mechanically laid.

Technical Specification

Explosive Content: 5.6 kg Trotyl
Total weight: 8.6kg
Activating pressure: 130 - 420 kg
Detection: Locator, Probes, Visual, Dogs
Fuze: UTMM-1 pressure operated cocked striker, shear pin control

Method of Operation

The required pressure applied to the top of the mine causes the stepped pressure plate to distort and collapse transferring the pressure to the fuze head. Pressure on the fuze head causes the shear pin to shear, releasing the spring loaded striker to fire the percussion cap which initiates the detonator, the explosive chain is carried on through the booster to the main charge.

Arming

Excavate cavity for the mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine in hole and partially cover. Fit the detonator to fuze, remove pressure plate from mine, insert the fuze assembly and screw the pressure plate back onto mine. Cover and camouflage mine.

Neutralizing

This mine cannot be neutralized.

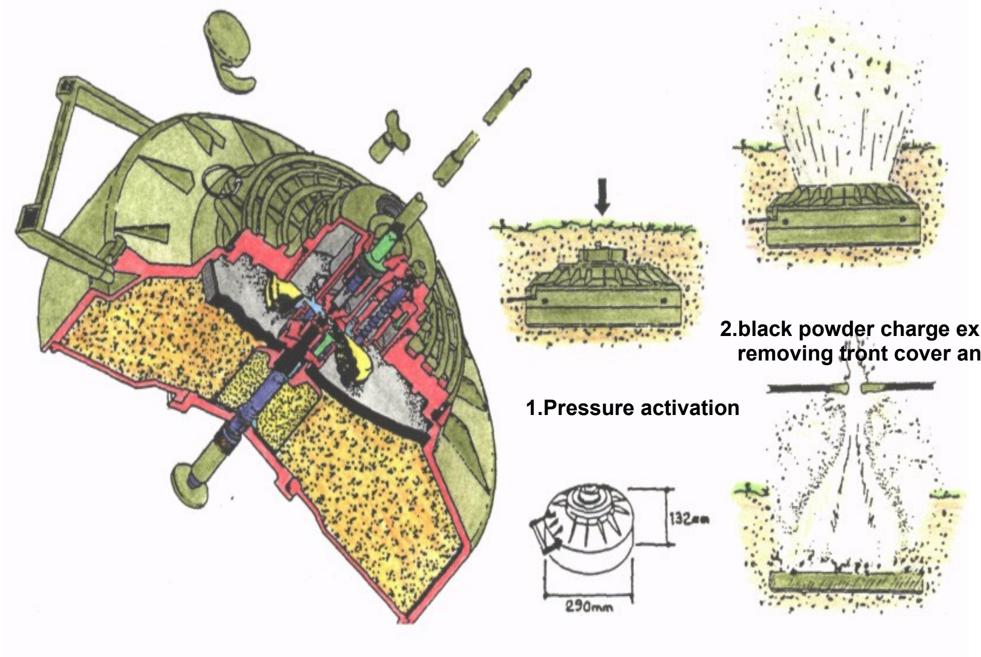
Disarming

Uncover mine checking all around and beneath for booby traps or pull mine. Unscrew pressure plate and remove fuze assembly. Separate detonator from fuze.

CAUTION

Mine has two anti-lift wells.

TMRP-6 A/T PLASTIC/METAL SHAPED CHARGE MINE YUGO



1.Pressure activation

2.black powder charge explodes removing front cover and soil

3.Main charge explodes converting liner into plungerjet

Description

TMRP-6 is a round plastic mine with radial reinforcing ribs. It has a slightly raised pressure plate and an integral (fuze standing proud of the mine. There is a clockwork delay to arming mechanism of 1 - 4 minutes. It can be fitted with a tilt rod or can be substituted with a pressure release anti-lift switch and detonator. This mine employs a shaped charge after a powder charge has blown away the top of the mine and spoil cover. It can penetrate 40 mm of armour at 80 cm range and can be used for lateral attack.

Technical Specifications

Explosive content: 5.1 kg TNT
Total weight: 7.2 kg
Activating pressure: 1.3 kg tilt rod, 150 kg pressure
Detection: Locator, visual, dogs
Fuze: UTMRP-6 Pressure or tilt operated ball retained cocked striker, clockwork delay to arming

Method of Operation

Depressing the arming button causes the clockwork delay to arming mechanism to rotate, completing the explosive chain. After this stage the required pressure distorts or collapses the pressure plate pushing an internal cylinder down until the retaining ball falls out, releasing the striker. (Lateral pressure on the tilt rod has the same effect). The striker hits a percussion cap which fires a powder charge blowing away the top portion of the mine and soil cover. Immediately after this the delay element fires the main detonator which initiates the booster and main charge. The shaped charge is generated upwards into the underside of the target

Arming

Remove transit plug from mine base and screw in detonator. Remove cap from fuze head, insert key and wind up clockwork mechanism. Excavate cavity for mine and allow 2 - 6 cm of spoil coverage when buried. Position mine and partially cover. The safety element is removed and the tilt rod fitted (if required). For pressure activation the pin is withdrawn and the safety circlip removed. Depress arming button and listen for mechanism working. Cover and camouflage mine.

Neutralising

Remove tilt rod from igniter and refit safety circlip. If circlip is not available the mine cannot be neutralised.

Disarming

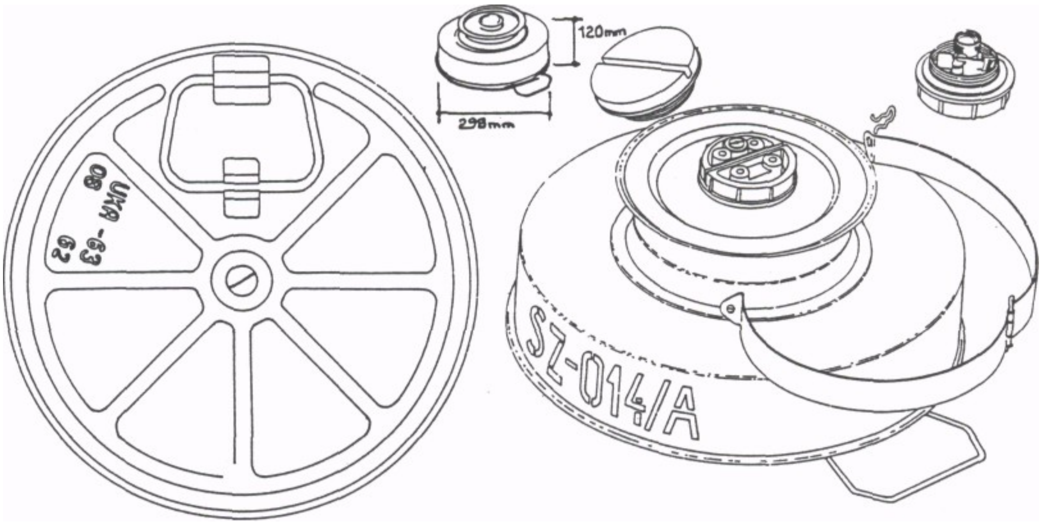
Uncover checking all around and beneath for booby traps or pull mine. Remove cap from igniter head, insert key and rotate to interrupt explosive train. Remove detonator and plug from mine base.

CAUTION

Even with detonator removed if clockwork mechanism is not rotated to interrupt explosive train, powder charge can still function. Pressure release switch can be fitted to detonator well

UKA-63 A/T METALLIC PRESSURE / TILT OPERATED SHAPED CHARGE MINE

HUNG



Description

UKA-63 is a round metal mine with a noticeably high pressure plate on top. The pressure plate is concave around its circumference and has a seam around it to facilitate collapse under pressure. There a a hinged metal band which fits around the pressure plate to prevent accidental compression in transit and there is a carrying handle on the underside of the mine. In the centre of the base a a fuze well for an anti-lift device, probably a pull mechanism such as MUV, The main fuze is bakelite and has a clockwork delay to arming and can be fitted with a lilt rod. The mine employs a shaped charge and is probably designed to be mechanically or hand laid.

Technical specifications

Explosive content: Unknown.
Total weight: Unknown.
Activating pressure: Unknown.
Detection: Locators, Probes, Visual, Dogs
Fuze: EB6-6B pressure operated ball retained cocked striker with clockwork delay to arming (similar to MVZ-57 in operation and principle).

Method of Operation

The required pressure applied to the top of the mine distorts and collapses the pressure plate transferring the bad onto the fuze. Compression of the fuze allows the striker retaining ball to fall away (see MV-S) releasing the striker which fires the detonator which in turn initiates the booster and the main charge.

Arming

Excavate cavity for mine to allow for 2 - 6 cm of spoil coverage when buried. Position mine and remove safety band from around pressure plate. Partially cover mine and remove transit plug. Remove transit cap from base of fuze, check that fuze is unarmed (igniter in horizontal position) and wound up. Screw fuze into mine, cover mine and fuze leaving only the arming button exposed. Remove safety clip, depress arming button, listen for sound of mechanism working, finally camouflage mine. Delay to arming is 1 - 2 minutes.

Neutralizing

Replace safety band around pressure plate. (Not to be relied upon if there is any chance of vehicles traversing mine.)

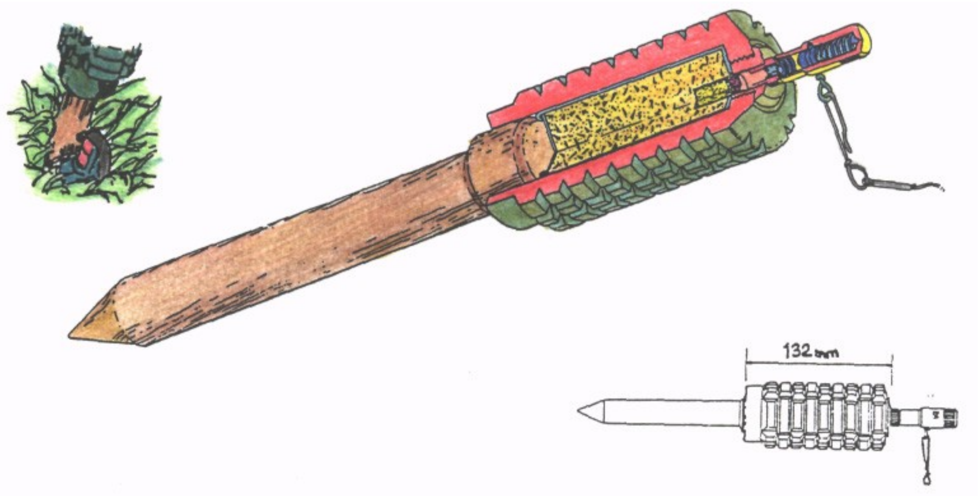
Disarming

Check all around and beneath for booby traps or pull mine. Unscrew and remove fuze.

CAUTION

Provision for booby trapping, probably MUV type pull device.

PMR-2A A/P FRAGMENTATION STAKE MINE YUGO



Description

PMR-2A is one of the wide family of stake mines, (see comparison page), having an olive green segmented body of cast iron containing a bursting charge, a threaded fuze adaptor at the top and with a wooden stake fitting into the charge recess in the bottom. Activation is by trip wire, the mines being deployed in a similar manner to the POMZ-2 series.

Technical Specification

Explosive Content: 100 gr pressed TNT
Total weight: 1.7 kg
Activating pressure: 3 kg
Detection: Visual, Trip wire feeler
Fuze: UPM2A with M67 detonator

Method of Operation

A pull on the trip wire releases the spring tensioned striker to initiate the percussion cap, detonator and bursting charge.

Arming

Drive the stake halfway into the ground, place the mine body with explosive charge onto the stake. Screw the M67 detonator section into the mine. Screw the top of the fuze onto the M67 and attach the trip wire. Remove the brass safety element from the pull pin.

Neutralising

Trace both ends of the trip wire checking for other trip wires and mines. When the trip wire is cleared and identified as a simple trip wire, cut trip wire 150 mm from the mine and tie around the fuze to secure the pull pin.

CAUTION

For tension release insert nail or pin into inner hole, cut trip wire.

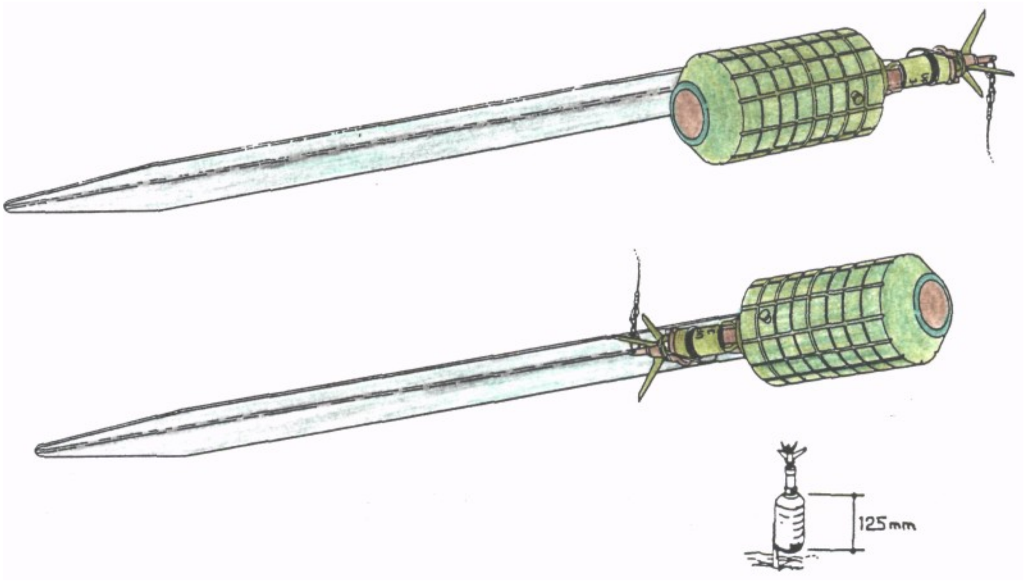
Disarming

Remove fuze and detonator from mine, unscrew detonator. Dismantle mine from stake.

CAUTION

Stakes have been booby trapped with hand grenades (see illustration).

PMR-3 A/P FRAGMENTATION STAKE MINE YUGO



Description

PMR-3 is similar in may ways to the other variants of stake mine (see stake mine comparison page). However due to the fuze arrangement and other differences it is covered separately. PMR-3 has a steel fragmentation body which accommodates a bursting charge and can be mounted on its steel stake by a pair of bayonet type fixings in either a fuze up or down position. The fuze is the same as on the PROM-1 and is activated by trip wire or pressure. In most applications with PMR-3 the pressure mode, though still active, will be redundant.

Technical Specification

Explosive Content: 410 gr TNT
Total weight:
Activating pressure: 3 kg (pull) 9 kg (pressure)
Detection: Visual, trip wire feeler
Fuze: UPMR-3 Trip and pressure activated ball retained cocked striker

Method of Operation

The required pull (or pressure) pushes the internal cylinder in the fuze down releasing the retaining bafts of a cocked striker, allowing the striker to move forward under spring pressure to initiate the detonator which detonates the main charge, scattering shrapnel over a 20 mtr effective radius.

Arming

Drive the mounting stake halfway into the ground. Insert the main charge into the mine body and screw on the retaining cap. Screw fuze and detonator into hole in retaining cap. Mount mine body on stake, either fuze up or down, depending upon required height of trip wire. Attach trip wire to anchor and then clip to pull ring on fuze. Trip wire should be up to 16 mtr long. The final action is to move the safety clip form the lowered (safe) position to the horizontal (armed) position.

Neutralising

Move safety clip into the lowered (safe) position. Trace both ends of trip wire checking for other trip wires and mines. When trip wire is confirmed as a simple trip wire, cut trip wire close to mine.

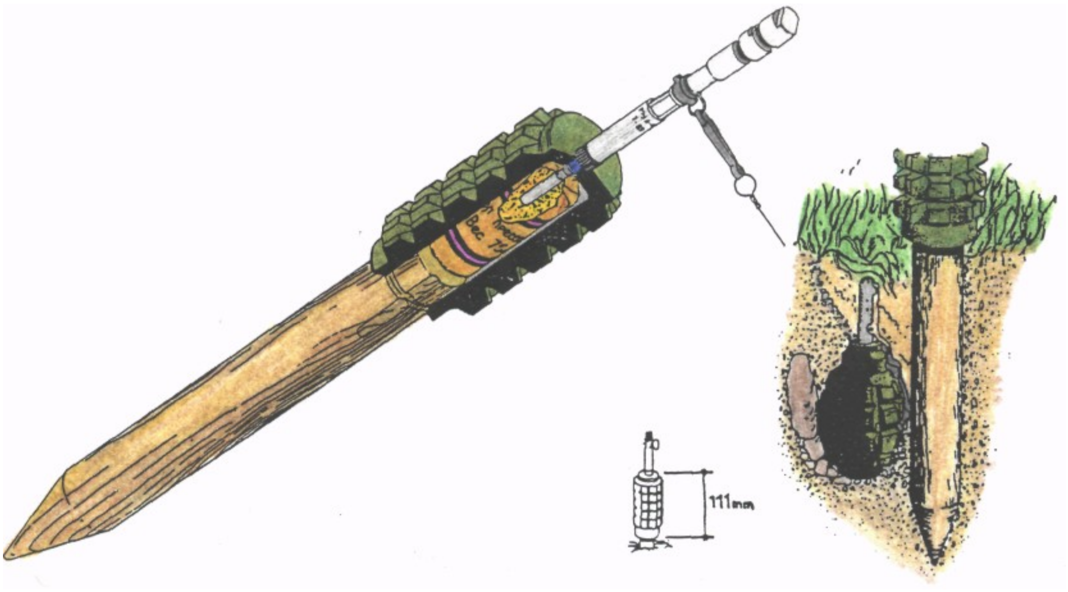
Disarming

Unscrew and remove fuze, remove detonator from fuze. Remove mine body from stake, unscrew retaining cap and take out main charge. Remove stake from ground

CAUTION

The easiest part of a stake mine to booty trap is the stake. Probe first, pull if suspicious.

POMZ-2 A/P FRAGMENTATION STAKE MINE USSR



Description

There are many variations on this mine (see comparison page) which has an olive green iron fragmentation body which accommodates a bursting charge and is mounted on a stake fixed in the ground. Activation is by trip wire, the mines are usually employed in either rows or clusters of at least 4 mines often with complicated trip wire layouts. Lethal radius is 4 mtr.

Technical Specification

Explosive Content: 75 gr TNT
Total weight: 2 kg
Activating pressure: 1 kg pull
Detection: Visual, Trip wire feeler
Fuzes: MUV, MUV-2, MUV-3, MUV-4 and VPF igniters

Method of Operation

If fitted with MUV or MUV-2, 3 or 4 ignitors a pull on the trip wire removes the striker retaining pin allowing the striker to initiate the percussion cap which in turn initiates the detonator and then the main charge. Where a VPF ignitor is used a pull on the trip wire removes the pull rings from the ball of the striker.

Arming

Drive the mounting stake halfway into the ground Insert the charge into the cast iron body and place mine on stake. Screw detonator onto ignitor body and insert assembly into the top of the mine. Attach trip wire to anchor and then to MUV pin or VPF pull ring. The final action is to remove any safety or arming pin. Trip wire length is usually 4 - 5 mtr.

Neutralizing

Trace both ends of trip wire checking for other trip wires and mines. When trip wire is cleared, and identified as a simple trip wire, cut trip wire 150 mm from mine and tie around ignitor to secure pin. (With VPF insert safety pin first).

CAUTION

For tension release insert nail or pin into inner hole, cut trip wire.

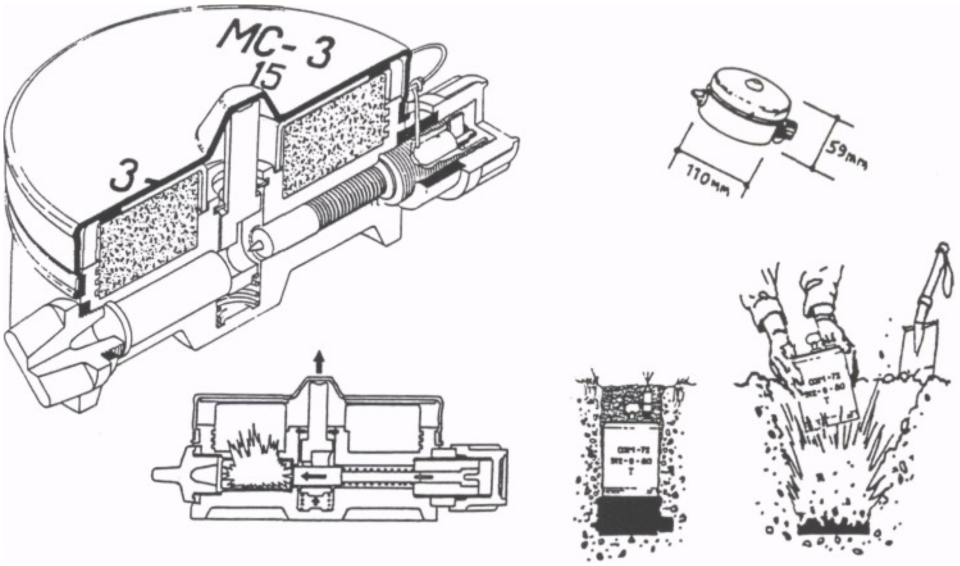
Disarming

Remove igniter and detonator from mine, unscrew detonator. Dismantle mine from stake.

CAUTION

Stakes have been booby trapped with hand grenades (see illustration).

MS-3 A/P PRESSURE RELEASE BOOBY TRAP MINE USSR



Description

This pressure release booby trap mine uses most of the components at the PMN A/P mine. Differences are the rubber cover, the actuating plunger and the quantity of explosive (which is greater than the PMN). The MS-3 has the same 15 - 20 minutes delay to arming as the PMN.

Technical Specification

Explosive Content: 310 gr
Total weight: 0.63 kg
Activating pressure: 5 – 6 kg minimum load to prevent actuation
Detection: Visual, Probe, Fingers
Fuze: Integral, cocked striker, delayed arming

Method of Operation

The application of 5 - 6 kg minimum load to the top of the mine depresses the actuating plunger against upward spring pressure, so that the step on the plunger obstructs the top portion of striker channel. When the safety pin is withdrawn the pressure of the firing pin spring causes a steel wire to start cutting through a lead delay strip (identical in principle to MUV-2 igniter). After a delay of 15 - 20 minutes the wire cuts through the lead strip and allows the striker to move forward to be retained by the step in the actuating plunger. After this stage the removal of the load from the top of the mine allows the actuating plunger to move upwards under spring pressure, releasing the striker which fires the initiator which in turn detonates the main charge. When detonated underneath another mine or explosive store it will usually detonate this also.

Arming

Excavate cavity for MS-3 to allow load to bear directly and firmly on actuating plunger and to allow for removal of safety pin after load is applied. Remove initiator plug and insert initiator, (MD-9 detonator), replace plug. Place mine in prepared hole, apply toad and partially cover. (If MS-3 is employed as anti-lift on other mine, arm load mine first with the exception of final safety). Remove safety pin on MS-3. Carefully cover and camouflage MS-3 being careful not to move or lift load. The MS-3 will be armed 15-20 minutes after the safety pin is removed.

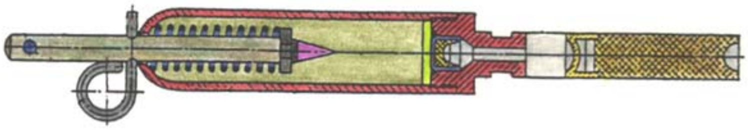
Neutralising

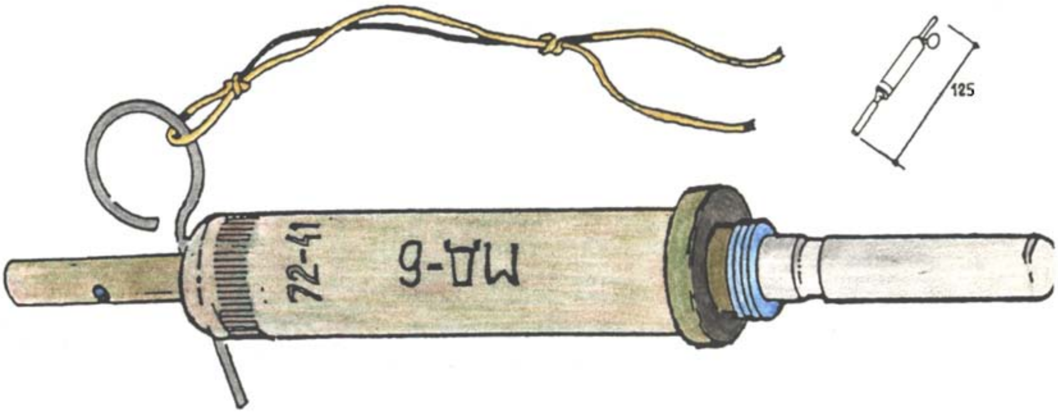
This mine cannot be neutralised, the forward movement of the striker prevents safety pin replacement

Disarming

CAUTION: If MS-3 is identified or suspected, always pull load from cover. If due to tactical consideration pulling the load and the ensuring detonation are unacceptable, carefully excavate under load to gain access to the initiator plug. Unscrew initiator plug and remove initiator (a length of thin wire or a thin screw driver may help). **CAUTION:** This procedure is extremely hazardous.

MUV IGNITER USSR





Description
MUV is one of the most commonly used and copied Soviet Igniters, and can be made of metal or plastic. Depending on application it can be activated by pull (POMZ-2), pressure (PMD-6), or tension release (POMZ-2). A pull of approximately 0.5 – 1 kg or pressure of 2 -15 kg is required to remove the striker retaining pin. Two types of retaining pin are used. Loop ended for pull or winged for pressure applications. There is also a combination pin which combines both these functions as with the RO-1. Most, but not all MUV's have an additional hole in the striker for the insertion of a transit / cocking pin. With this pin in place the striker will not contact the percussion cap.

Method of Operation
Removal of the striker retaining pin allows the striker, under spring pressure, to move forward and strike a percussion cap screwed into the base of the MUV.

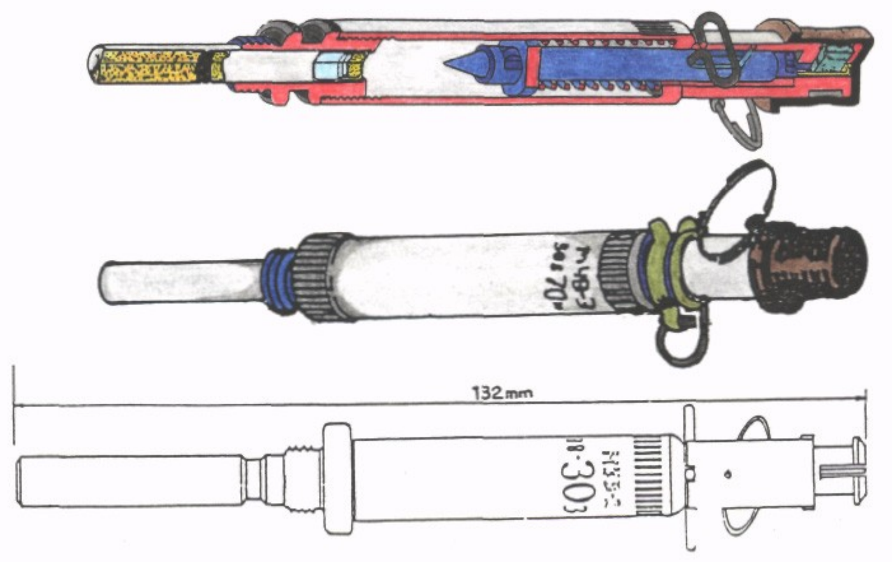
Arming
Most MUV's are fitted with a straight transit / cocking pin in the outer hole of the striker as a safely measure.

- Pull - Grasp straight pin. pull out striker to reveal inner hole. Insert looped or winged retaining pin, depending on application, in inner hole. Screw detonator into base and place in mine or charge.
- Trip wire - See above, plus fasten trip wire to anchor and then to loop ended pin. Remove straight pin.
- Tension release - With only straight pin in inner hole, screw detonator into base of igniter. Screw assembly into mine. Attach trip wire to anchor and run trip wire to mine. Pull tripwire taught over propositioned nail or similar device and attach to outer hole of MUV striker. Ensure trip wire supports full spring pressure. Gently remove straight pin. See illustration for other methods.

Neutralising
See Anti-personnel mines POMZ-2 and PMD-6. Secure striker retaining pin in MUV igniter using trip wire or adhesive tape. For tension release insert nail or pin into inner hole, cut trip wire. When in pressure application rotate through 180 degrees so that striker retaining pin cannot be forced out.

Disarming
Remove igniter assembly from mine holding the striker retaining pin in place. Separate detonator from igniter.

MUV-2 and MUV-3 IGNITOR USSR



Description

MUV-2 is a modified MUV ignitor with a lead strip arming delay mechanism which gives a delay to arming of approximately 25 - 30 minutes. It can be activated by pressure (PMD-S) or pull (POMZ-2). The body is metal and a pull of approximately 0,5 - 1 kg is required to remove the striker retaining pin.

MUV-3 appears to be identical to MUV-2 except for a clip on the striker retaining pin to increase the amount of pull required to remove the pin to approximately 1,5 – 6 kg.

For pressure operation both ignitors require approximately 1,5 – 10 kg to function.

Method of Operation

When the arming pin a withdrawn the pressure of the striker spring causes a steel wire to start cutting through a lead delay strip. After a delay of approximately 25 - 30 minutes the wire cuts through the lead strip and allows the striker to move forward to be retained by the retaining pin. After this stage, removal of the retaining pin by a pull on the trip wire or pressure application will allow the striker to initiate a percussion cap which in turn initiates the detonator.

Arming

1. Screw detonator into ignitor base and place in mine or charge.
2. Attach trip wire to anchor and then to retaining pin if applicable.
3. Remove arming pin. MUV-2 & MUV-3 will be armed in about 25 - 30 minutes. Once removed for more than a few seconds the arming pin cannot be replaced.

Neutralising

See Antipersonnel mines POMZ-2 and PMD-S. Secure striker retaining pin in ignitor using trip wire or adhesive tape. In pressure application rotate through 180 degrees so that striker retaining pin cannot be pushed out.

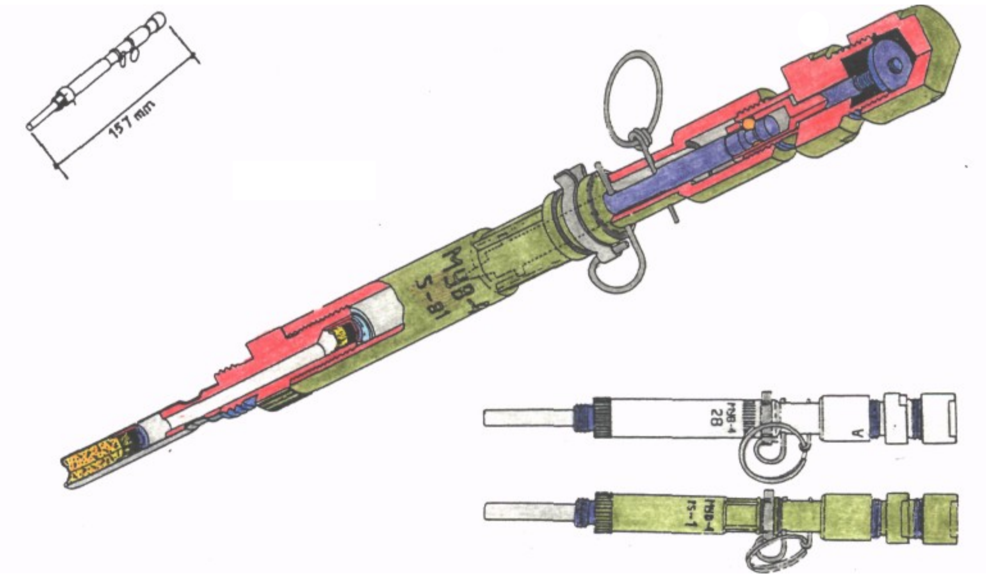
Disarming

Remove ignitor assembly from mine holding the striker retaining pin in place. Separate ignitor from the detonator.

CAUTION

The MUV-2 or 3 can be used as a time delay fuze. Removal of the striker retaining pin will allow the delay period to start. Once the lead strip is cut through, the striker is free to initiate the percussion cap. Delay times can be increased by using different lead strips.

MUV-4 IGNITOR USSR



Description
MUV-4 is a development of the MUV-2 with a piston in a silicon gel filled dash pot arrangement to provide a delay to arming. It can be activated by pressure (PMD-6) or pull (POMZ-2). By removing the striker retaining pin first and then the arming pin it can be used as a time delay fuze or time switch (see VP-13). The body is either metal or green plastic with the top delay mechanism being always aluminium. A pull of approximately 1kg is required to remove the striker retaining pin. The delay to arming is approximately 25-30 minutes.

Method of Operation
When the arming pin is withdrawn the pressure of the striker spring pulls a piston through a silicon gel filled dash pot After the delay period (about 25-30 minutes) the piston reaches the wider part of the dash pot where the striker retaining balls fall away and allow the striker to move forward to be retained by the striker retaining pin. After this stage removal of the retaining pin by a put on the trip wire or pressure applied as with a PMD-6 will allow the striker to initiate a percussion cap which in turn initiates the detonator.

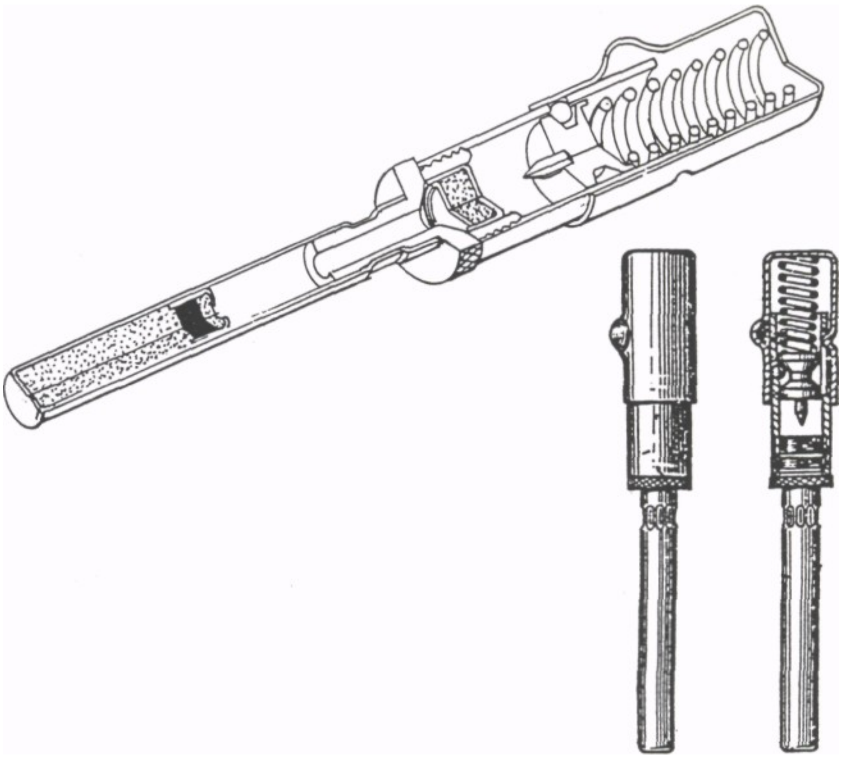
Arming
1. Screw detonator into igniter base and place in mine or charge.
2. Attach trip wire to anchor and then to retaining pin if applicable.
3. Remove arming pin. MUV-4 will be armed after the delay period has elapsed. Once removed for more than a few seconds the arming pin cannot be replaced.

Neutralizing
See Anti-personnel mines POMZ-2 and PMD-6.
Secure striker retaining pin using trip wire or adhesive tape. In pressure application rotate MUV-4 through 180 degrees to prevent the striker retaining pin being pushed out

Disarming
Remove MUV-4 assembly from mine holding the striker retaining pin in place. Separate MUV-4 from detonator.

CAUTION
MUV-4 can be used as a time delay fuze. Removal of the striker retaining pin will allow the delay period to start, at the end of which the striker is free to initiate the percussion cap or activate a switch as in the case of VP-13.

MV-5 PRESSURE OPERATED FUZE USSR



Description

MV-5 a a pressure fuze with a spring loaded striker enclosed in a metal or plastic case. There a a pressure cap with a bulge in its side which is the recess to allow the release of the strike retaining ball. This fuze is usually employed in WWII vintage mines or improvised mines.

Method of Operation

The application of 10 - 30 kg or more to the top of the pressure cap forces it down compressing the striker spring and releasing the retaining ball, which escapes into the recess in the pressure cap. The spring driven striker, thus released, strikes the percussion cap which in turn sets off the detonator.

Arming

Screw detonator / percussion cap assembly into MV-5 (usually MD-2. MD-5M or MD-6 detonator). Insert fuze and detonator assembly into mine. The fuze has no safety device, the detonator is not attached until the mine is ready for the installation of the fuze.

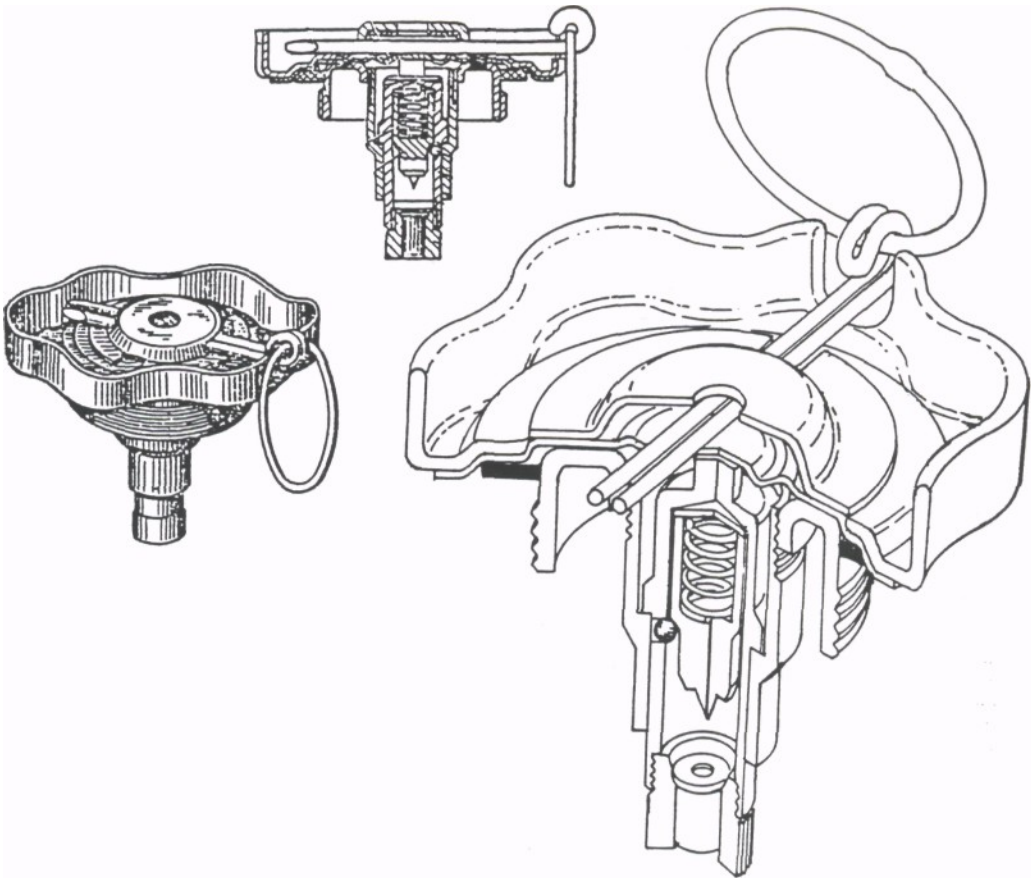
Neutralising

This fuze cannot be neutralised.

Disarming

Without applying pressure to the pressure cap, remove the fuze / detonator assembly from the mine. Separate the detonator from the MV-5.

MVM PRESSURE OPERATED FUZE USSR



Description
MVM fuze consists of a scalloped cap holding a more developed version of MV-5. With MVM the striker barrel is prevented from moving inwards by a safety pin, thus preventing accidental functioning. It is designed for use with TM-46 mines which are to be mechanically laid or transported in an armed condition.

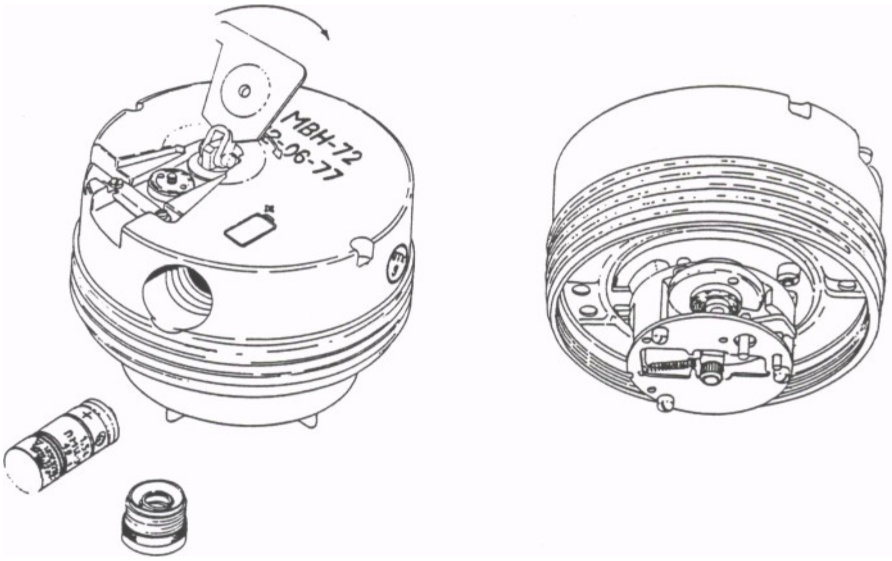
Method of Operation
The required pressure applied to the pressure cap compresses the striker spring until the striker retaining ball escapes into the wide upper section of the pressure cap sleeve. The spring driven striker thus released sets off the detonator.

Arming
Screw MD-6 detonator assembly onto MVM. Screw fuze and detonator assembly into mine. Remove safely pin from fuze cap.

Neutralising
Insert safety pin or similar through hole in fuze cap.

Disarming
Insert safety pin or similar through hole in fuze cap, then unscrew and remove fuze from mine. Remove detonator from fuze.

MVN-72 MAGNETIC INFLUENCE FUZE USSR



Description

The MVN-72 is a magnetic influence fuze for use with TM-62M or TM-62P and TM-72 A/T mines. The fuze is a circular assembly which screws into the TM-62 / 72 fuze well. On the top of the fuze is a flap which covers the arming button, while in the side of the fuze body is a housing for a 1.5v battery. Though TM-62 mines can be mechanically laid MVN-72 must be armed by hand. There is a delay to arming time of approximately 2 minutes. Length of battery life is unknown.

Method of Operation

The exact functioning mechanism of the MVN-72 is unknown but like most magnetic influence fuzes it is probably a coil induction system. The clockwork delay to arming mechanism rotates an electric detonator from the horizontal (unarmed) position to the vertical (armed) position similar to the MVZ-62 and activates the electronics of the fuze. When a vehicle such as a a lorry or tank with a large magnetic signature passes over I, the fuze will function detonating the mine. The fuze is designed to function when the target is directly above it, not off to one side. There appears to be no anti handling mechanism in the fuze itself though obviously TM-62 can be fitted with one (MS-3). Minimum magnetic signature that MVN-72 responds to is unknown. The fuze is not pressure sensitive.

Arming

A battery is fitted into the fuze as indicated and the transit cap removed from the fuze. Check that the detonator is in the horizontal (unarmed) position. Wind up the clockwork delay mechanism by rotating the flap above the arming button through 180 degrees in the direction of the arrow. Screw the fuze into the mine and cover and camouflage the mine leaving the fuze top exposed. Depress the arming button and listen for mechanism working. Camouflage the top of the fuze. The fuze will be armed in approximately 2 minutes.

Neutralising

It may be possible to neutralise by lifting and rotating the anodised flap or by removing the battery but these methods have NOT been proved.

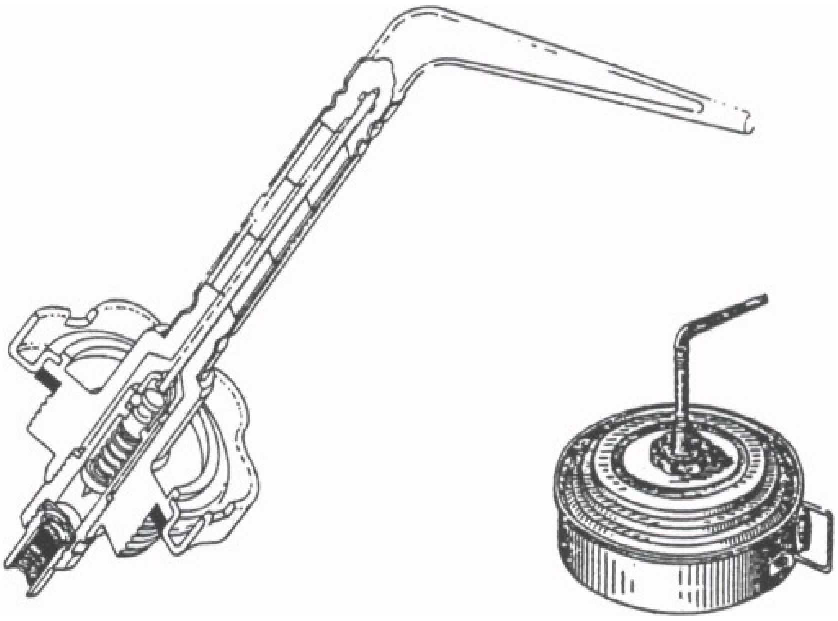
CAUTION

Do not use or cany metal tools.

Disarming

Pull mine, unscrew and remove fuze. Remove battery from fuze.

MVSh-46 & MVSh-57 TILT ROD OPERATED FUZES USSR



Description

MVSh-46 is identical in principle and operation to MVSh-57, only the bases differ to allow MVSh-46 to be employed with TM-46 and MVSh-57 to be used with TM-57. The fuze consists of a tilt rod with an actuating handle angled at about 20' and a fuze cap holding the striker assembly. The tilt rod is designed to ensure that the mine does not rely on the vehicle wheel or track to detonate it but will also be detonated when the tilt rod catches the underside of the vehicle thus providing a full width attack capability.

Method of Operation

Pressure applied in any direction to the tilt actuating handle causes the metal tubular cover to bend 25' - 30' allowing the 3 cylindrical spaces, through which the striker retaining rod passes, to rotate slightly on one edge increasing the distance between the tit handle and striker head. This allows the striker retaining rod to Eft the bell shaped ball retaining housing approximately 3 mm, freeing the striker retaining balls from the striker and releasing it onto the detonator assembly in the base of the fuze.

Arming

Screw MD-10 detonator into fuze base. Screw fuze into mine.

CAUTION

Hold fuze by housing plug NOT by any part of the tilt rod.

Neutralising

It is not possible to neutralise this fuze, there are no safety devices.

Disarming

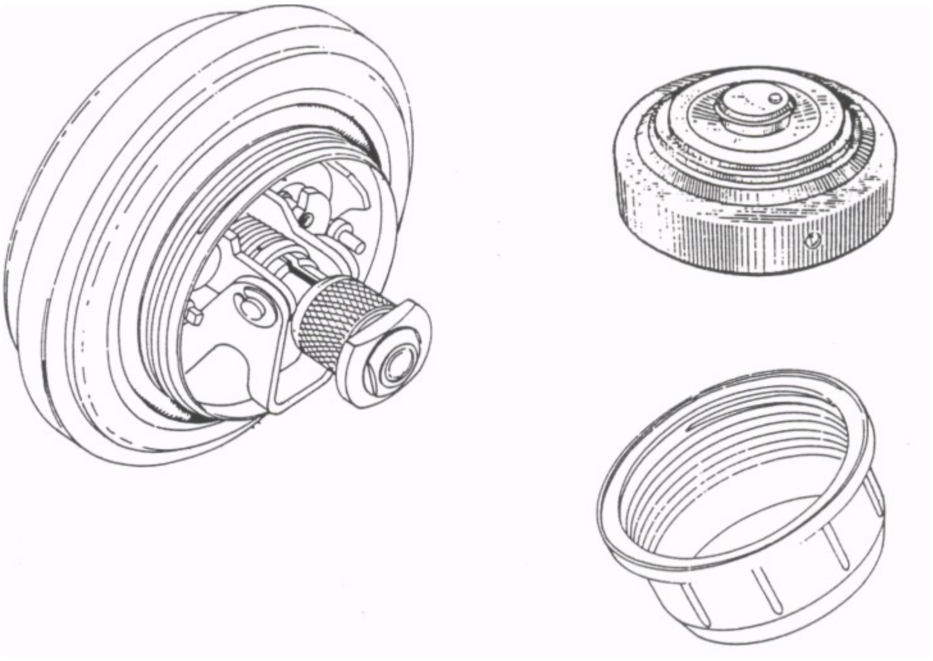
Unscrew fuze from mine and remove detonator from fuze.

CAUTION

Do not apply pressure to tilt rod or handle. Hold only by housing plug.

Note: (TMK-2 tilt rod is identical to MVSh in principle and operation).

MVZ-57 PRESSURE OPERATED DELAY ARMED FUZE USSR



Description

MVZ-57 a a clockwork delay armed fuze for use with TM-57. It a designed for mechanical laying but can also be used for hand laying. This is the most common fuze used with TM-57. The fuze consists of a pressed steel khaki body with an arming button on top and a safety clip and retaining spring. Inside is a clockwork mechanism which rotates the initiator from the horizontal (unarmed) position to the vertical (armed) position. The initiator is a ball retained cocked striker identical in principle and operation to MVM and MV-5.

Method of Operation

Depression of the arming button releases a clockwork mechanism which rotates the initiator and detonator from the horizontal to the vertical position and holds if locked in this position. The time taken for this to occur is 25 - 30 seconds, this is the delay to arming time. After this stage the required pressure applied to the pressure cap compresses the striker spring until the striker retaining ball escapes into the wider upper section of the pressure cap sleeve. The spring driven striker, thus released, hits the percussion cap and in turn sets off the detonator.

Arming

Remove transit cap from fuze. Check that mechanism is wound up and that the initiator is in the horizontal position. Screw fuze into mine, release spring retaining clip from around fuze and pull off safety clip. Depress arming button and listen for mechanism working. The fuze will be armed in 25 - 30 seconds.

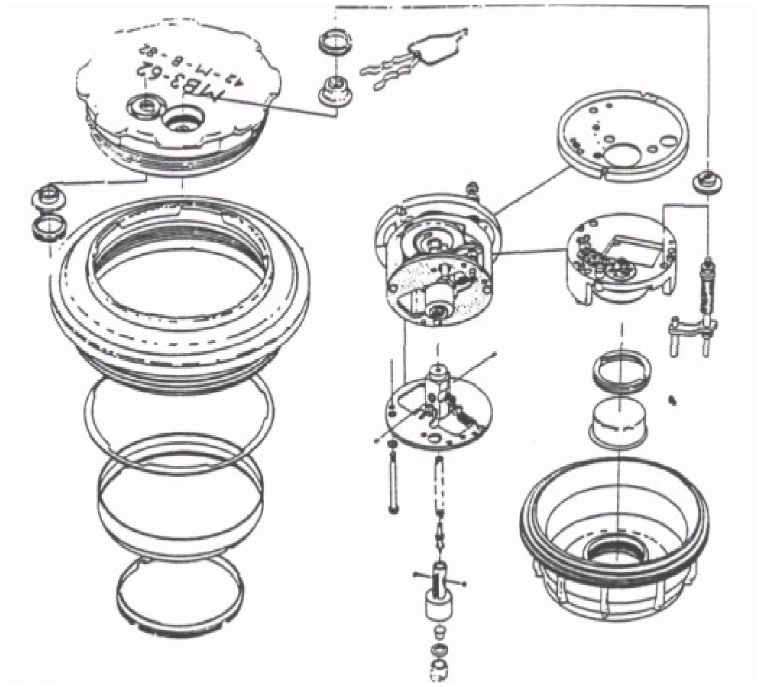
Neutralising

This fuze cannot be neutralised.

Disarming

Unscrew and remove fuze from mine.

MVZ-62 PRESSURE OPERATED DELAY ARMED FUZE USSR



Description

MVZ-62 is a clockwork delay armed fuze for use with TM-62M. It is designed for mechanical laying but can also be used for hand laying. The is the most common fuze used with TM-62M. The fuze consists of a green pressed steel pressure housing in which the fuze mechanism is supported. The fuze cap which acts as a pressure plate is of red / brown bakelite with a green metal arming button which has a safety circlip, adjacent to this is a round key hole. Inside is a clockwork mechanism which rotates the initiator from the horizontal (unarmed) position to the vertical (armed) position. The initiator is a ball retained cocked striker identical in principle and operation to MVM and MV-5.

Method of Operation

After winding up the clockwork mechanism with the key, depression of the arming button releases the mechanism which rotates the initiator and detonator from the horizontal to the vertical position and holds it locked in this position. The time taken for this to occur is 60 -70 seconds, this is the delay to arming time. After this stage the required pressure applied to the pressure plate collapses the pressure housing transferring the load onto the initiator. This compresses the striker spring until the striker retaining ball escapes into the wider upper section of the sleeve. The spring driven striker, thus released sets off the detonator.

Arming

Remove transit cap from fuze, check that initiator is in the horizontal position. Screw fuze into mine and insert key, turn 7 revolution clockwise, remove key. Remove safety circlip and depress arming button, listen for mechanism working.

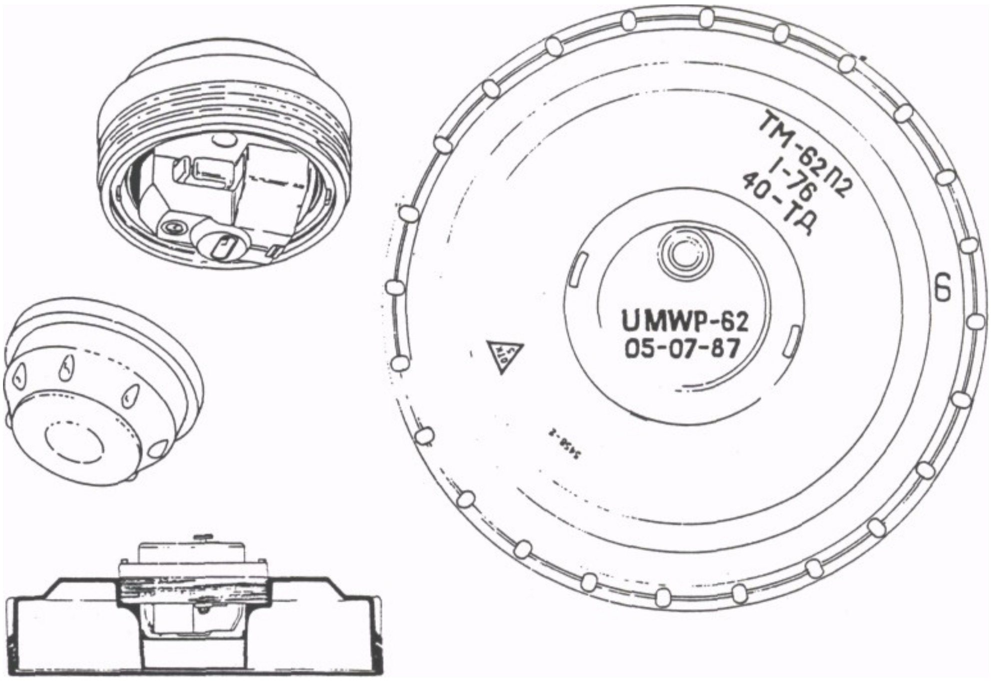
Neutralising

Insert key and turn 7 revolution clockwise (as for winding) this moves the initiator back into the horizontal position.

Disarming

After neutralising, unscrew and remove fuze.

MWP-62 PRESSURE OPERATED DELAY ARMED FUZE USSR



Description

MWP-62 is the minimum metal fuze for use with TM-62P. It is designed to be non detectable with metal detector locators and for mechanical laying (though it can be hand laid). This is the most common fuze used with TM-62P. The fuze is made of reddish / brown bakelite. The flat top acts as a pressure plate while the rim is designed to shear and collapse under the required bad. On the top of the fuze is a bakelite arming button which has a safety clip. Inside is the bellows operated delay arming mechanism.

Method of Operation

Depression of the arming button releases the horizontal slider mechanism which carries the detonator. The slider moves horizontally under the influence of a spring expelling air from an inflated bellows as it does so, until the detonator is moved into alignment between the striker mechanism and the booster pellet. The time taken for this to occur is approximately 60 seconds. This is the delay to arming time (the delay being caused by the resistance of the air filled bellows to the sliders movement). After this stage the required pressure (approx.175 – 250 kg) applied to the fuze top collapses the rim causing the striker to be driven against the percussion cap which in turn sets off the detonator and the booster pellet

Arming

Remove transit cap from fuze, check that the slider mechanism is in the unarmed position i.e. not central in the fuze, and that the booster pellet is in position. Screw fuze into mine. With mine partially buried, remove safety circlip and depress arming button fully.

Neutralising

This fuze can not be neutralised.

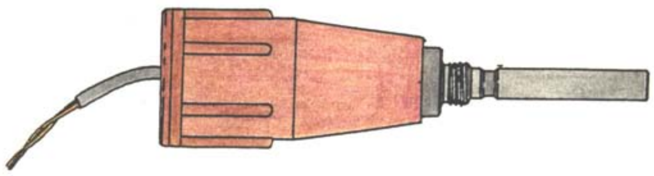
Disarming

Unscrew and remove fuze from mine. Then destroy using explosives or burning.

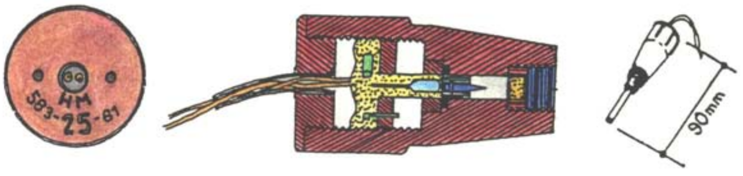
CAUTION

Detonator and striker mechanism still aligned after disarming.

NM ELECTRO MECHANICAL FIRING SWITCH USSR



НМ ДЕТОНАТОР



Description

The NM initiator is a development which makes full use of the standard thread used on a Soviet detonator and igniter adaptors. The NM uses electrical initiation to drive a firing pin into a percussion cap. This means that any mechanically initiated mine or demolition store in the Soviet armoury which is usual initiated by an MUV type or VPF igniter can now also be electrical initiated by using an NM initiator. NM is made of red/brown plastic and usually has long 460 mm electrical leads.

Method of Operation

When the required electrical current (probably 0.5 amp) flows through the NM initiator it causes an electrical squib to fire. This shears the retaining ring around the firing pin and drives the firing pin into a percussion cap which it initiates. This in turn initiates whatever detonator is housed in the adaptor that the NM is screwed onto.

Arming

Connect NM electrical leads to electrical initiation system being employed (VP-13, MVE-72, Command wire). Remove transit cap from NM. Screw NM onto detonator adaptor MD-2, MD-5M or directly onto mine in the case of OZM-3, OZM-4 or OZM-72. Screw detonator and NM into mine in the case of MON series mines or demolition charges.

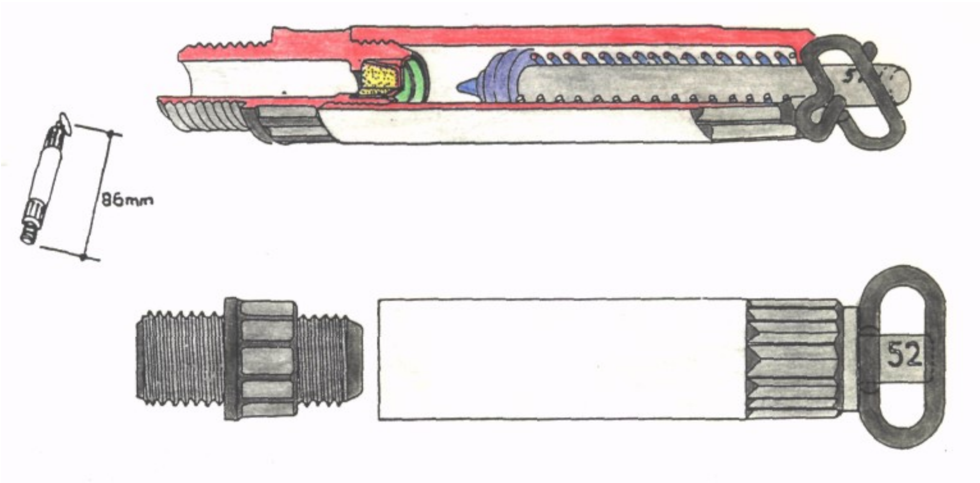
Neutralizing

Neutralise electrical initiation system (see VP-13. MVE-72) or confirm command wire initiation and cut command wire.

Disarming

Remove NM from mine or charge, remove detonator if fitted.

RO-1 IGNITER CZECH



Description

RO-1 is a direct copy of the Soviet MUV igniter. Although looking slightly different, in principle and operation they are very similar. Depending on application RO-1 can be activated by pull (PP-Mi-Sr-II). Of pressure (PP-Mi-D). The body may be of metal or plastic and a pull of approximately 1kg is required to remove the striker retaining pin. Rather than the two separate pins of the MUV the RO-1 employs a combination loop ended and winged pin.

Method of Operation

Removal of the striker retaining pin allows the striker, under spring pressure to move forward and strike a percussion cap screwed into the base of the RO-1.

Arming

- RO-1 is not normally fitted with an outer hole or transit pin so it cannot be used in the tension release mode. Screw detonator into the base and place in mine or charge.
- Trip wire - Fasten trip wire to anchor and then to loop ended pin.

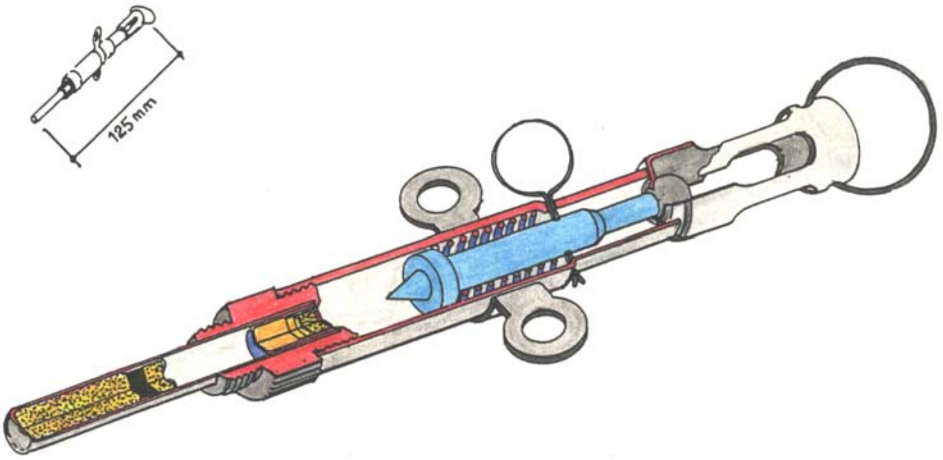
Neutralizing

Secure striker retaining pin in igniter using trip wire or adhesive tape. In pressure application rotate through 180 degrees to prevent striker retaining pin being pushed out

Disarming

Remove igniter assembly from mine holding the striker retaining pin in place. Separate detonator from igniter.

VPF IGNITOR USSR



Description
VPF pull igniter is used for initiating trip wire operated, standard and improvised mines, particularly booby traps. The body is metal and an axial or lateral pull of between 2 and 7 kg is required to release the striker.

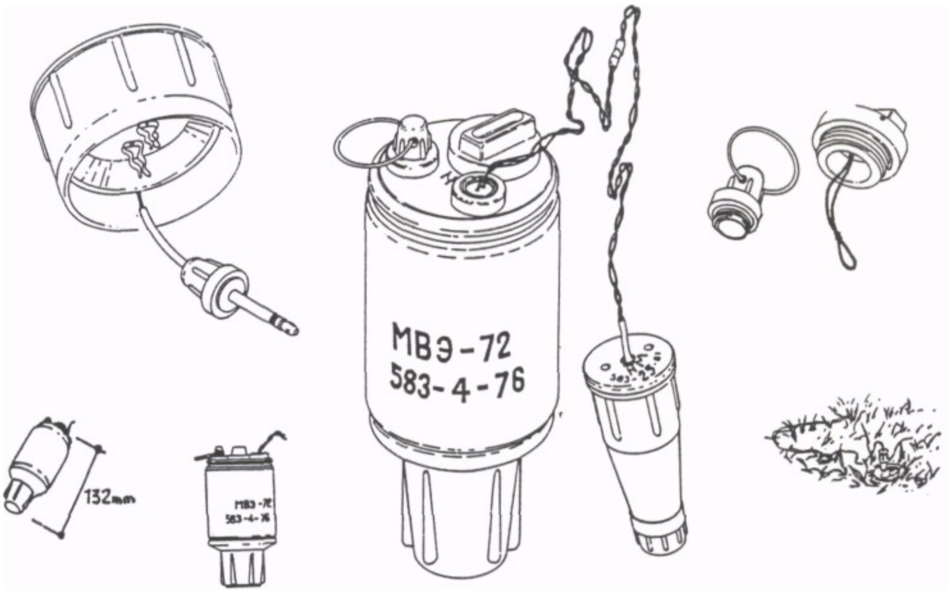
Method of Operation
Lateral or axial pull on the clamp top pulls the claw like base from the ball shaped end of the striker. Once released the striker moves forward under spring pressure to strike the percussion cap and initiate the detonator.

Arming
- Assemble igniter top by forcing clamp top on to the bat shaped end of the striker.
- Screw the detonator onto the igniter base.
- Insert assembly into charge or mine and secure.
- Attach trip or pull wire to ring after fixing trip wire to anchor first
- Remove safety pin.

Neutralizing
Replace safety pin or similar into igniter, secure with wire or adhesive tape. After checking trip wire carefully and confirming as a simple trip wire, cut trip wire close to initiator.

Disarming
Remove igniter assembly from mine or charge. Separate igniter from detonator.

MVE-72 A/P ELECTRICAL BREAK WIRE INITIATOR USSR



Description

MVE-72 is an initiation device and control unit consisting of a small, usually olive green metal cylinder which houses a collapsing circuit electronics pack. Protruding from the bottom a a ribbed battery cap which is made of reddish brown bakelite. The top of the cylinder is made of the same material as the battery cap and has on it a screw on cap, a jack connector with 60 mtr two strand break wire and a pair of electrical wires to an NM initiator.

Method of Operation

MVE-72 works as an electrical collapsing circuit. When the fragile break wire, which acts as a loop is broken by some one treading on it or walking through it, the circuit is broken. The breaking or collapsing of this circuit allows power to be switched into the firing circuit, firing the NM initiator and initiating the explosive train in the mine to which it is connected
The system can be used with: MON-50, 100, and 200, OZM-3, 4, 72, 160 and other Warsaw Pact mines with the correct adaptor threads eg. PP- Mi-Sr. It is probable that MVE-72 is the initiator mechanism for the TM-73 lateral attack mine which a thought to use a modified RPG-18 A/T weapon.

Arming

The mine to be initiated is positioned and partially camouflaged. The battery is fitted to the MVE-72 and it is buried of concealed with just the top exposed. Remove the transit jack plug, insert the break wire jack plug and deploy the break wire from its spool (checking the wire for any damage or breaks) to cover the required arc within the lethal range of the mine. Screw an MD detonator into the mine if required) and then screw the NM initiator onto the mine. Unscrew the cap on top of the MVE-72 unit to expose the pull cord of the friction igniter. Pull the cord to initiate the pyrotechnic delay to arming and retire from the area. The MVE-72 will be armed in approximately 1 minute.

CAUTION
If the break wire is damaged or broken the mine may detonate at the end of the arming delay period.

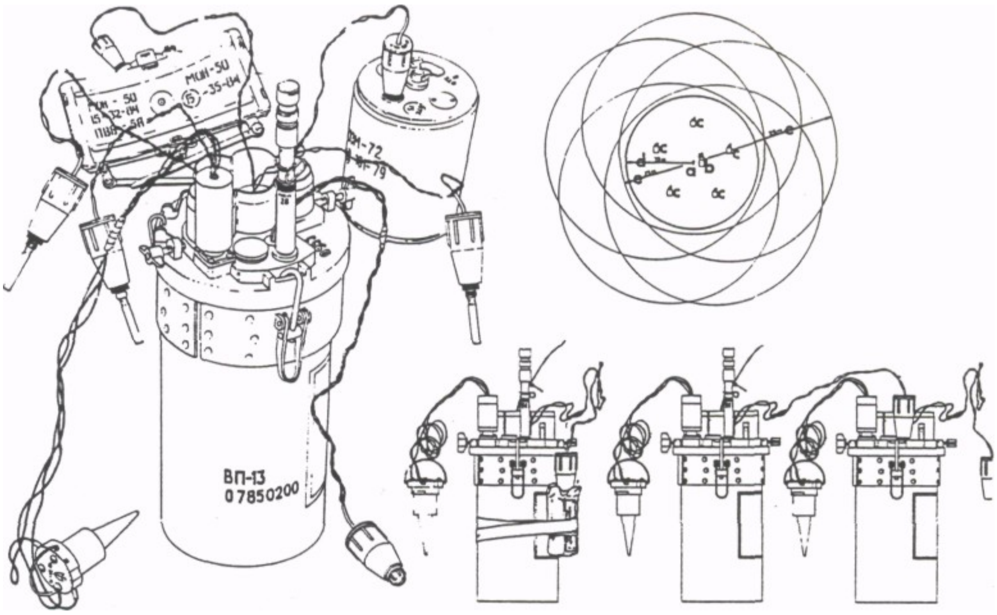
Neutralising

MVE-72 cannot be safely neutralised.

Disarming

CAUTION: Approach carefully, the break wire is much harder to detect than a trip wire and much easier to break.
When the MVE-72 unit is located trace the firing leads to the mine and identify the mine. Check direction and location of break wire. Remove detonator and NM from mine. Remove detonator from NM. Uncover MVE-72 carefully checking for booby traps or pull. Unscrew battery cap and remove battery. Unplug break wire jack.

VP-13 A/P SEISMIC CONTROL SYSTEM USSR



Description

VP-13 or 12 consists of a green metal cylinder housing 6 x 1.5v batteries and an electronics pack. On the top are 5 mine firing wires, a connector for a geophone. a connector for the arming switch and a pair of leads to allow for self destruction at the end of battery life (69 days) or the arming of another VP-13. There is also a red led to indicate that the device is switched on and about to arm itself.

Arming

Batteries are fitted as is the geophone plug and the arming switch (usually MUV-4 or EXhV-7). The two back leads are connected to an EDP detonator or an NM with MD-5M detonator and a 200 gr self destruct charge which is taped into position within the white rectangular outline on the side of the VP-13 unit. The geophone is pushed into the ground until its top is just below the surface. The VP-13 is buried or hidden close by. The thin lacquered, copper coloured firing wires are connected, by NM initiators to five mines positioned to cover the required killing area, with the geophone within their lethal range. (Detection range of geophone is approximately 15 mtr, OZM-72 lethal radius 25 mtr - see illustration) Finally the arming switch is activated (MUV-4 remove both pins) and the killing area evacuated

Method of Operation

The SV-20-P geophone monitors ground vibrations and its electrical signals are analysed by the VP-13 unit. Activity typical of foot steps causes a firing impulse to be generated to fire the first mine. Further activity will cause the second mine to be fired and so on for the third, fourth and fifth mines. It is thought that impulses detected by the geophone at rates greater than 3 per second or less than 1 in 4 seconds are ignored. The system can be used with: MON-50, 100 and 200, OZM-3, 4, 72, 160 and other WP mines with the correct adaptor threads eg. PP-Mi-Sr.

Neutralizing

Extremely difficult due to the danger of approaching close enough to locate mines or VP-13 precisely. Methods employed with some degree of success:

- Shooting mines and VP-13 from a safe distance if possible
- Driving cattle or goats etc. into suspected detection area
- Firing into suspected detection area

CAUTION not recommended

- Very slow approach into detection area (less than 1 impulse in 4 seconds) to disconnect geophone or individual mines.

Cut all firing cables. Disconnect self destruct charge if fitted and unscrew geophone. Remove VP-13 top and take out batteries. Disarm mines according to type.